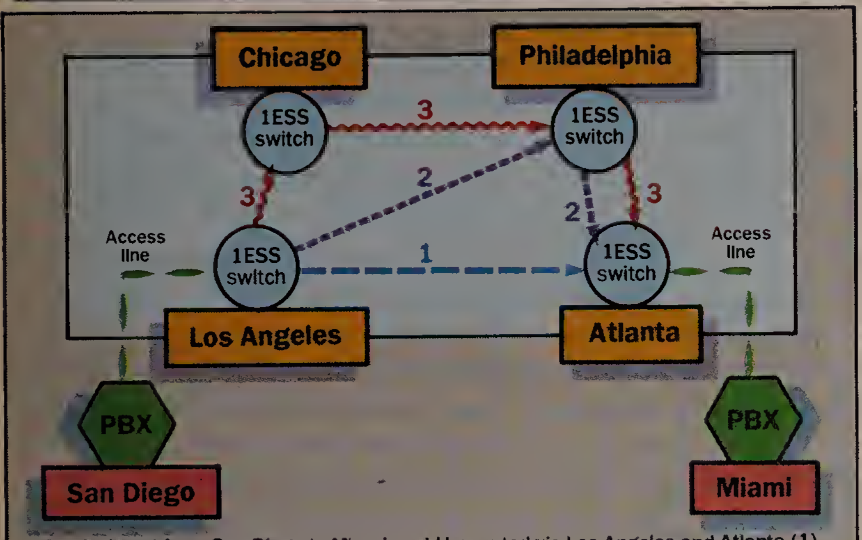
NETWORK WORLD

THE WEEKLY FOR LEADING USERS OF COMMUNICATIONS PRODUCTS & SERVICES VOLUME 3, NUMBER 23 AUGUST 11, 1986

Sample EPSCS call-routing scheme



A call placed from San Diego to Miami could be routed via Los Angeles and Atlanta (1). Heavy usage of this link would necessitate the call be routed via Los Angeles, Philadelphia and Atlanta (2), or via Los Angeles, Chicago, Philadelphia, and Atlanta. (3).

SOURCE: AT&T

▶ AT&T SWITCHED SERVICES

EPSCS users balk

Swelling access fees mar voice/data service.

BY BOB WALLACE
Senior Writer

Users of AT&T's flagship voice communications service are being forced to explore networking alternatives because of the skyrocketing charges they must pay for connections to the service's points of presence.

AT&T's Enhanced Private Switched Communications Service (EPSCS) is designed to provide significant savings for large users by combining their voice and data traffic with the traffic of other large users and routing it through dedicated, shared switches.

EPSCS currently handles the bulk of the voice and data communications traffic of some two dozen of the nation's largest corporations. But shared EPSCS users such as Xerox Corp., Bethlehem Steel Corp. and Eastman Kodak Co. claim the cost of acquiring lines from Bell operating companies represents between 35% and 40% of the sum they pay for the service.

Users of basic EPSCS can procure access lines to link their facilities with net-

See **EPSCS** page 35

▶ AIRWAVE SECURITY

FCC proposes satellite transmitter ID scheme

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — Goaded into action by an airwave pirate, the Federal Communications Commission last week commanded all video uplinks to identify themselves.

The FCC mandated that, beginning in 1988, every video transmission must include an immutable identification number embedded in it by the transmitting equipment. The move is an effort to squelch any further transgressions like that recently perpetrated by the notorious "Captain Midnight."

In another move that has direct implications for many business users, the FCC also proposed to ex-

See **ID** page 6

▶ MARKET REACTION

Starlan stampede starts

IEEE 802.3 blessing spurs product wave.

BY MARY PETROSKY
West Coast Correspondent

A ground swell of vendor support for the 1M bit/sec 802.3 specification recently approved by the Institute of Electrical and Electronics Engineers ("Starlan gets 802.3 blessing, *Network World*, Aug. 4) means users are likely to see a slew of inexpensive local network products based on the standard by year end. Users will benefit from competition as vendors try to build feature-rich, but inexpensive, 802.3 products.

The 802.3 specification, also known as the 1-Base-5 specification, describes a low-speed, baseband Ethernet that uses telephone-type twisted-pair wire configured

See **Starlan** page 35

NETWORK LINE

News

TRW's Information Networks Division is expected today to unwrap a local-area net for the IBM Personal Computer, marking the first time the firm has used micros as anything but dumb terminals on broadband nets. The company will also unveil a line of Ethernet-compatible modems. Page 2.

▼

The California Public Utilities Commission endorses a refund plan that requires Pacific Bell to return to customers at least $20 million in overpayments from questionable marketing practices by the carrier. Page 4.

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A coalition of consumers sues to block a $274 million rate hike by New York Telephone Co. At question is whether the New York Public Service Commission followed standard procedure in approving the increase. Page 4.

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The FCC trims rates of return for AT&T and local carriers, a move that could lead to as much $1.2 billion in rate cuts in 1987 and 1988. Page 6.

▼

AT&T will supply the state of Wisconsin with a $200 million voice and data network that the state hopes will pare $163 million from its budget during the next 10 years. Page 7.

▼

Missouri Sen. John Danforth is pondering the stand he will take on the Federal Telecommunications Act of 1986. Danforth will make his decision known soon. Page 35.

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Features

Corporate growth can be a telecommunications time bomb if communications managers don't plan for the changes. Digital Communications Associates' director of corporate systems tells how his company diffused that bomb. Page 31.

▼

NEWSPAPER

FEATURE FOCUS

Managers: Talking telecom to top brass

Tech skills take backseat as managers become strategists.

BY MARY PETROSKY
West Coast Correspondent

A book called *How to Succeed as a Telecommunications Manager* would probably read much like any other management book. The cardinal rules are to have a clear concept of the business and to be a good communicator.

As a reflection of the profound changes in the communications industry, today's telecom manager is called on to be a strategist as well as an implementor. The result is that telecom managers feel increasing pressure to toss aside their technician caps and to put on the top management hat.

To succeed in this new role, the manager must learn to speak the language of the top executive.

☞ Continued on **page 28**

▶ LOCAL NETS

TRW group to unveil IBM PC local-area network

Modem line also expected to bow today.

BY MARY PETROSKY
West Coast Correspondent

TORRANCE, Calif. — TRW, Inc.'s Information Networks Division is expected today to introduce its first local-area network for IBM Personal Computers and compatibles. It will also introduce a line of modems that allow devices with Ethernet interfaces to be connected to broadband local nets.

Dubbed the PC Connection, TRW's local net consists of a PC Server and two network interface boards, one for a broadband and the other for a baseband local network. Prior to this announcement, TRW supported microcomputers only as dumb terminals on its broadband networks.

PC Connection products were developed by outside vendors, said Bronson Purdy Jr., director of sales and marketing.

PC Connection products include the TRW PC Server, available in two models, both based on the 32-bit Motorola, Inc. 68000 microprocessor. The tower model can support from 43M to 480M bytes of disk storage.

A desktop model, called TRW/DTS, can support up to eight asynchronous or synchronous connections. It has one serial and two parallel ports and can be configured with between 43M and 120M bytes of disk storage. Both models come with 60M-byte tape drives for backup. With 43M-byte disk storage, the tower model costs $13,900, the desktop model, $8,995.

The PC Server is supplied by Banyan Systems, Inc. of Westboro, Mass. The TRW PC Server can be configured through its front end with network interface boards from up to four different vendors, providing interconnections between different networks. With the PC Server, TRW is supporting its own Concept 2000 network, the IBM PC Network and Token-Ring Network, Interlan, Inc.'s Ethernet, Datapoint Corp.'s Arcnet, Corvus Systems, Inc.'s Omninet, Proteon, Inc.'s Pronet, Ungermann-Bass, Inc.'s Net/One and Excelan, Inc.'s Ethernet.

Through the PC Server's back end, users can connect the server to various host processors, wide-area networks and other broadband and baseband networks. Software for the network provides a number of network applications, including a naming and addressing system, file and printer sharing, electronic mail and network diagnostics.

The broadband interface board, the PCU-2001, allows IBM Personal Computers, Personal Computer XTs, Personal Computer ATs and compatibles to interface directly to TRW's broadband local-area network. The board can also be used to connect micros to servers and servers to each other. Data is transmitted at 2.5M bit/sec. The PCU-2001 is priced at $645.

The baseband interface card, PC-Elink, is an Ethernet controller board designed to fit in the short slot of an IBM Personal Computer and PC Server. PC-Elink can connect micros to PC Servers via thin or standard Ethernet cable. The board can also talk to TRW's communications servers at a data rate of 10M bit/sec. The PC-Elink is priced at $650.

TRW's E-Modems, available in two- and eight-port models, allow devices on Ethernet networks to access resources on a broadband network. The TRW E-Modem supports speeds of 10M bit/sec over an 18 MHz wide channel on TRW's 450 MHz broadband cable. The two-port model is priced at $4,350, and the eight-port model is $5,350.

The Information Networks Division also introduced the E-Modem Repeater, a network interface unit that allows a user to connect an Ethernet network directly to a broadband network, allowing users to connect clusters of micros on an Ethernet network to a broadband backbone network. The Repeater retimes, amplifies and repeats all signals it receives from one coaxial cable segment and passes the signal to the next coaxial cable segment. E-Modem Repeater costs $6,250 for single or dual cable nets.

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Call *Network World* Editor Bruce Hoard toll free at (800) 343-6474, extension 332.

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▶ 2,400 BIT/SEC MODEM MART

IBM boosts modem line

Unwraps two Hayes-compatible units.

BY BOB WALLACE
Senior Writer

RYE BROOK, N.Y. — In a move aimed at bolstering its modem line, IBM last week introduced a pair of Hayes Microcomputer Products, Inc.-compatible 2,400 bit/sec modems.

IBM unveiled the IBM 5842 Modem, a stand-alone unit, and the IBM Personal Computer Modem, a half-card product for use with its Personal Computer family and with its IBM Portable Personal Computer. According to IBM, the two modems are not designed to work with the company's recently unveiled Netview network management software and hardware.

A source within IBM claimed the chip set used in the two modems was manufactured by Rockwell International Corp., not IBM. An IBM spokesman would neither confirm nor deny that. The chip set converts an incoming analog signal to an outgoing digital signal.

Having waded into the already crowded 2,400 bit/sec full-duplex modem market, IBM will go toe-to-toe with the likes of Hayes, Concord Data Systems, Inc., Racal-Vadic, Inc. and Microcom, Inc. The 2,400 bit/sec full-duplex modem market, which boasted sales of $118 million in 1985, is expected to balloon to $207 million by year end, according to projections from International Data Corp., a Framingham, Mass.-based research and consulting firm.

While the IBM 5842 costs roughly $100 more than similar 2,400 bit/sec modems offered by competitors, the unit's $719 price tag probably will not discourage buyers, according to Frank Dzubeck, president of Washington, D.C.-based Communications Network Architects. He asserted that IBM users would probably prefer to purchase modems with the IBM logo.

The IBM 5842 can handle either synchronous or asynchronous traffic at speeds up to 2,400 bit/sec. The IBM Personal Computer Modem, priced at $569, supports asynchronous data transmission only. Both units are compatible with the CCITT V.22bis recommendation at speeds of 2,400 bit/sec or 1,200 bit/sec. The devices are also compatible with the Bell 212A standard at 1,200 bit/sec and with the Bell 103 standard at speeds up to 300 bit/sec.

The IBM 5842 features include autodial support for both synchronous and asynchronous data transmissions.

Both modems have an Automatic Adaptive Line Equalization capability that reduces the frequency of errors in transmitted data by automatically compensating for variations in the quality of telephone lines. Both units, which are available now, also perform a series of diagnostic tests.

▶ DIGITAL EQUIPMENT CORP.

DEC debuts multivendor terminal server

Decserver 200 wrapped up in announcement of two new VAX 8000 models.

BY PAUL KORZENIOWSKI
Senior Editor

MAYNARD, Mass. — Digital Equipment Corp. took a step last week to maintain the momentum behind sales of its Decnet products. That step was the addition of the Decserver 200, a new terminal server that supports remote connections and links other vendors' Ascii computer systems to DEC's principal network architecture.

The announcement was made in conjunction with the introduction of two new members to the VAX 8000 series of minicomputers.

David Terrie, president of Newport Consulting, based in Boston, said DEC is being forced to open its Decnet network up to other vendors' wares. Competing local-area network vendors have been harping on DEC's inability to attach other companies' computer systems to Decnet easily.

"DEC did not want to lose sales to companies like Ungermann-Bass, [Inc.] and Sytek, [Inc.] that specialize in attaching a variety of equipment," he said. "With this announcement, DEC has opened its network up ever so slightly."

The Decserver 200, DEC's second terminal server, connects a maximum of eight devices to an Ethernet local-area network. Each user is able to work with up to eight network services, which can be host sessions, printers or cluster services, such as load balancing facilities. The devices are attached to the server with an RS-232 connection, and they transmit data at speeds up to 19.2K bit/sec.

> *"DEC has opened its network up ever so slightly."*

The product represents DEC's second Ethernet terminal server. Decserver 100 was introduced last year, but the server is unable to support remote connections or other companies' equipment.

Users are attracted to terminal servers because the devices enable them to allocate bandwidth effectively, said Mark Harris, marketing manager for terminal server products at DEC. Harris predicted robust growth in the terminal server market.

Terrie disagreed with Harris' projections. "Terminal servers do not have enough bandwidth to support the high-speed transmission needed for devices such as personal computers," Terrie said. "Personal computers are growing at a much faster rate than terminals."

The Decserver 200 comes in two models. The Decserver 200/MC can use an Ethernet connection to attach to other vendors' computer systems. The product supplies only a physical connection; additional software is needed to provide features such as terminal emulation and file transfer. It works with RS-232 connections.

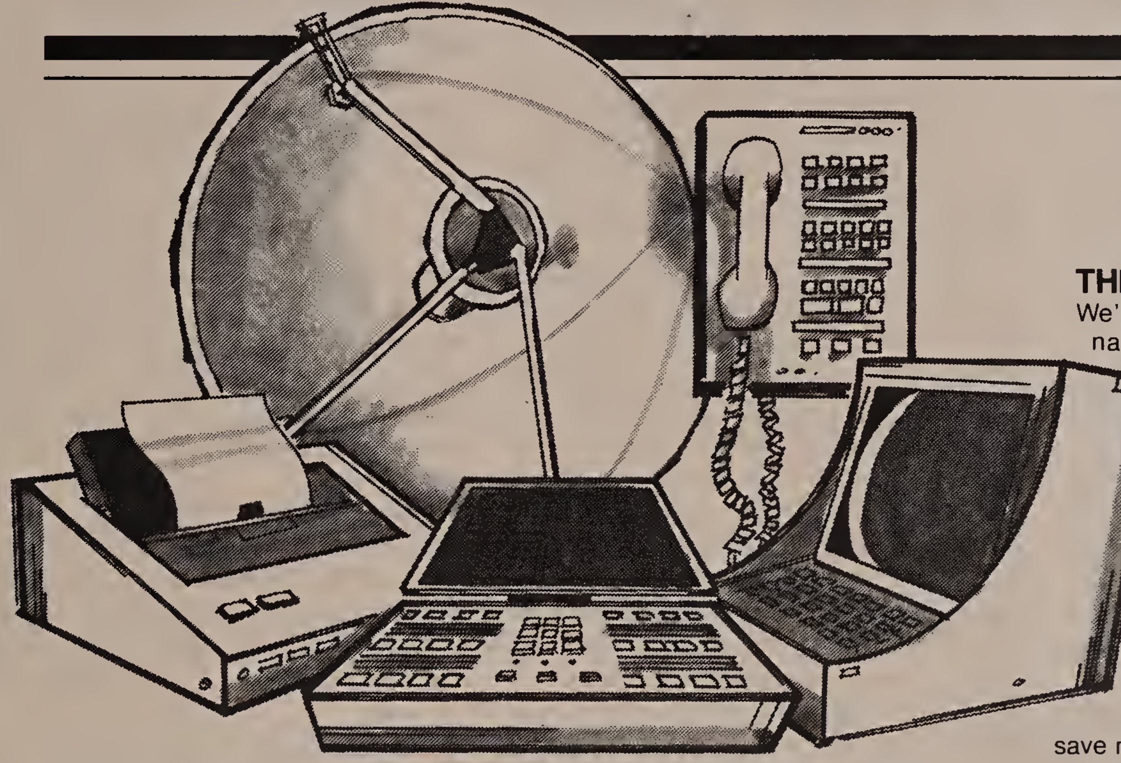
The second model, Decserver 200/DL, works with DEC-423 signaling. This enables the user to attach terminals to the server at distances of up to 1,000 feet.

Both models feature status and performance monitoring, on-line help screens and intraserver communications. The status and performance information enables the user to examine traffic patterns and peak load conditions. Intraserver communications enables two devices connected to a Decserver 200 to communicate directly, rather than being routed through an Ethernet network.

Decserver 200/MC sells for $3,500, and Decserver 200/DL costs $3,100. Terrie was not impressed with the pricing. "Other vendors are selling devices that cost approximately $200 per port," he said. "DEC certainly hasn't made any price breakthrough."

Shipments of the servers are expected to begin in the fall. ▣

TALK TO US ABOUT COMMUNICATIONS SYSTEMS.



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▶ REGULATORY RULINGS

Pacific Bell to refund $20m in overpayments

BOC gets nailed for crooked marketing.

BY MARY PETROSKY
West Coast Correspondent

SAN FRANCISCO — The California Public Utilities Commission (CPUC) last week approved a plan through which Pacific Bell will refund to its customers at least $20 million.

The refunds are aimed at redressing overpayments stemming from questionable marketing tactics employed by Pacific Bell that led many consumers to pay for telephone services they did not want.

Although residential customers are the primary focus of the plan, Pacific Bell will also advise its business customers to review their telephone services.

The refund plan was developed jointly by the CPUC, a consumer group called Toward Utility Rate Normalization, a legal firm called Public Advocates, Inc. and Pacific Bell. It calls for Pacific Bell to notify all of its customers by mail and through advertisements that they may be eligible for a refund of payment for unrequested services. Since the questionable marketing practices were frequently directed at low-income and non-English-speaking customers, Pacific Bell must also promote its low-cost Lifeline telephone service — available for $1.48 per month — and provide refund information in Spanish, Chinese, Korean and Vietnamese, as well as English.

Pacific Bell has not determined what the cost of implementing the plan will be, said Dick Fitzmaurice, manager of media relations. The telephone company's preliminary estimate is that refunds could total $20 million; the PUC, however, believes the figure will go much higher. Nearly 1.5 million California families could be eligible for Lifeline service, but fewer than one-half of those families may now be enrolled in the program, said Robert Gnaizda, a partner with Public Advocates. Refunds for these customers alone could prove to be substantial, Gnaizda said.

Pacific Bell claims it uncovered the deceptive marketing practices itself and had already begun corrective measures back in April, Fitzmaurice said. "The initial CPUC investigation was based on our data," he said. "We knew there was a problem and were already taking steps to correct it."

One of the questionable sales tactics was package selling — the grouping of services such as call waiting and call forwarding at a price lower than the individual cost of services. "Package selling is against the tariffs of the CPUC," Fitzmaurice said. Another practice involved sales incentives and sales quotas, practices that Fitzmaurice admitted "got out of hand" in their implementation. "[With] most companies that institute sales incentives, no one would think twice about it. But a utility like Pacific Bell has a different relationship to its customer base," Fitzmaurice said. He said Pacific Bell has changed its incentive program so that customer representatives will receive their bonuses three months after a sale. In this way, he said, the bonus is based on customer satisfaction.

An investigation last spring by the CPUC's Public Staff into Pacific Bell's marketing practices led the staff to recommend several actions against the telephone company. These included a $49.5 million fine, which has been lumped with Pacific Bell's overall rate case. The fine will be evaluated along with Pacific Bell's overall financial standing, and it then will be decided how or if it will be paid. The rate case will be decided on late this year or early next year, Fitzmaurice said. In addition, Pacific Bell has been asked to retrain its 4,000 customer representatives, a project that is under way, according to another Pacific Bell spokesman.

"We learned a lesson, and we're not going to do it again," Fitzmaurice said. However, consumer groups are not willing to let Pacific Bell police itself just yet. Next month, an oversight board will be set up to monitor Pacific Bell's implementation of the refund plan and internal policies designed to prevent a recurrence of the abusive marketing tactics, Public Advocates' Gnaizda said. The board will include representatives from several minority groups.

Gnaizda and other parties familiar with the case see it as symptomatic of postdivestiture growing pains. "It's an institutional problem, rather than specific to Pacific Bell. It's the postdivestiture mentality," Gnaizda said.

Even Pacific Bell's own customer representatives have taken the company to task for the overly aggressive marketing tactics. Two weeks ago, a number of representatives filed suit against Pacific Bell. The suit alleges breach of the covenant of good faith and fair dealing between employer and employee, violation of public policy and intentional infliction of emotional distress. The Law Offices of David S. Sabih & Associates, the Pacific Grove, Calif., law firm that filed the suit on behalf of 25 Pacific Bell employees, has not yet specified an amount for damages.

Fear that the company may reinstitute the marketing practices was one motive that prompted the legal action, said attorney Bonnie Shirley. "The impression I was given was that the marketing people were given carte blanche," Shirley said. As a result, many customer representatives had the questionable marketing tactics "drummed into their heads" by their managers, Pacific Bell employees told Shirley.

Sales policies were set down in written documents and on videotape, Shirley was told. Customer representatives who tried to protest were told to "sell or get out" or that they had a bad attitude, Shirley said.

Pacific Bell has until Aug. 21 to respond to the suit.

▶ LEGAL ACTION

Users sue to block NY Tel rate hike

BY MICHAEL FAHEY
Staff Writer

ALBANY, N.Y. — A coalition of consumer groups based here recently filed suit to block a $274 million rate increase granted to New York Telephone Co. by the New York Public Service Commission (PSC).

The increase is scheduled to go into effect Aug. 30. The New York Supreme Court wil hear the coalition's petition this week.

A spokesman for the Consumer Protection Board, a state agency that belongs to the coalition, charged last week that New York Telephone "struck a sweetheart deal with the Public Service Commission," also a state agency, that allowed the telephone company to raise its rates without holding legally mandated hearings on the increases.

Jeffrey Weinstock, director of public information for the Consumer Protection Board, said New York Telephone has not indicated what services will be subject to the rate hike.

A spokesman for the PSC said the rate hike was considered and approved by the commission in hearings held last fall. At that time, New York Telephone requested a $700 million rate increase. After hearings on the matter, the PSC approved a portion of the increase, some $225 million. The spokesman said the additional $274 million increase contested by the coalition was approved by the PSC pending New York Telephone's presentation of more up-to-date information about operating expenses. The company has since supplied that information, the spokesman said.

Weinstock contends the most recent increase should have been the subject of new hearings.

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"ABC membership applied for"

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▶ CWA/RBOCS

One down, six still at odds as contract ends

BY NADINE WANDZILAK
Staff Writer

Although Pacific Telesis Group reached a tentative agreement with the Communications Workers of America (CWA) well before its contract expired Saturday night, negotiations between the CWA and the other six regional Bell operating companies appeared last week to be heading down to the wire.

At press time, CWA negotiators at several RBOCs were pessimistic about reaching a settlement before current contracts expired. The first postdivestiture contract negotiations on behalf of some 310,000 workers at local telephone companies owned by the seven RBOCs got under way in June.

In separate but related action, some 155,000 CWA members ratified a three-year contract with AT&T last week that calls for an 8% wage increase over three years and includes job security provisions. AT&T workers went out on strike for three weeks in June before reaching a settlement.

Pacific Telesis and the CWA reached tentative agreement eight days before their contract expired. Their proposed pact includes an employment security provision that guarantees no workers will be laid off during the three years of the contract. According to the proposal, workers whose jobs are eliminated will be reassigned and retrained. CWA members will receive a 2% wage increase in each of the next three years, plus an annual cash payment based on the company's performance.

Pacific Telesis estimates the value of the agreement to be approximately $360 million. Some 43,800 CWA members in Pacific Telesis' local telephone companies in California and Nevada are expected to vote on the proposed contract by Sept. 12.

Employment security has been a key issue. While some RBOCs had made no concrete proposals on the matter as of late last week, Pacific Telesis and the CWA reportedly began working out their differences on the issue as long as a year ago. At that time, union and company officers formed groups around the state to resolve local problems. The groups' primary goal was to eliminate the possibility of layoffs while ensuring the company's efficiency, according to Ben Dial, Pacific Telesis' executive vice-president of human resources.

Several CWA negotiating groups said they would have been happy with a Pacific Telesis-like package. "We'd be happy if Ameritech would agree to the same terms as Pacific Telesis," said CWA public relations coordinator John Leslie. Leslie was pessimistic Thursday about an agreement being reached by the Saturday deadline.

A wage package similar to Pacific Telesis', but without any provision for employment security, provoked a negative CWA response at Bell Atlantic. "Things don't look good," said Ed Lewinski, public relations coordinator for workers in four areas covered by Bell Atlantic (Washington, D.C., Maryland, Virginia and West Virginia).

At US West, Inc., the CWA was expecting to review a new wage and employment security proposal due from the RBOC late last week. Both parties "were very far apart on major issues," according to Don McClure, CWA public relations coordinator.

At Southwestern Bell, both sides remained at odds over the wage issue, but were much closer to agreement on job security, according to CWA public relations spokesman Doyle Niemann. However, he said, the company was not willing to commit to a no-layoff policy.

The issues at Nynex remain wages, including retention of a cost-of-living adjustment and job security, according to CWA public relations coordinator Clara Allen. Allen commended the Pacific Telesis agreement, but noted the terms of that deal are not necessarily applicable at Nynex.

At press time, the CWA and BellSouth were "inching toward settlement, with no real insurmountable obstacles," according to the CWA's public relations coordinator Tim Ryles.

▶ LOCAL NETS

Software bugs plague network users

BY MARY PETROSKY
West Coast Correspondent

Second in a two-part series.

Part one ("Network Nirvana escapes PC users," Network World, *Aug. 4) discussed software problems hindering local-area network users — problems ranging from the limitations of single-user files to printing inconveniences and file corruption. DFS Dorland, Inc., an advertising agency in Torrance, Calif., is typical of users experiencing such difficulties. Some of the software problems the company faced were conflicts between Micropro International Corp.'s Wordstar word processing package and Lotus Development Corp.'s Lotus 1-2-3 spreadsheet software, which was running on a Novell, Inc. local net.*

Lotus and Wordstar files often ended up with the same names on the 100-user network, and files from one program were overwritten or destroyed by the other. Also, when a user exited one of the programs, the file did not always close. As a result, that file could not be reopened.

Although DFS Dorland wanted to continue using Wordstar to avoid retraining, network difficulties eventually led the company to look at other word processing packages. One likely replacement candidate the company evaluated was NewWord, a Wordstar look-alike from Newstar Software, Inc. of Pleasant Hill, Calif.

NewWord was designed to run in a network environment and features a lockout function, according to a company spokesman. If users attempt to access files already in use, they receive a message to that effect. Files in use can only be read.

Consultant David Ferris, chairman and chief executive officer of San Francisco-based Ferrin Corp., calls the problem of file corruption "the black box problem." Frequently, vendors tweak a single-user application to work in a network environment, Ferris said. "You run into intermittent problems — suddenly, you find your documents being garbaged, and you don't quite know why. You often can't get a precise idea of what's gone wrong."

"Most [network] packages right now have varying degrees of problems," Ferris said. The industry is still at square one. "Unfortunately, software vendors frequently are misleading. They get too enthusiastic about their software."

A related software problem involves the memory constraints of network-attached personal computers, said Pat Braden, copy supervisor at DFS Dorland. Although network versions of micro applications may be installed on a network server, the programs actually run on the individual user's microcomputer.

The combination of Microsoft Corp.'s MS-DOS, the network operating system and a large application is more than the typical micro with 256K bytes of memory can handle, Braden said. "Most network users can't load Ashton-Tate's Framework," she explained.

Insufficient memory is becoming a serious problem for network users. Even the 640K bytes of memory that DOS is capable of addressing can be taxed by hefty applications coupled with network software.

"As long as we're confined to 640K in DOS, we're going to have problems," said Dwayne Walker, a consultant with DMR Associates, Inc. in Glendale, Calif.

IBM's PC Local Area Network Program, for example, comes in four configurations that are based on functionality and reportedly range in size from 28K to 186K. "When you want all the network functionality that you paid for and the fancy application, that's when you fall into a black hole," Walker said.

IBM acknowledged the memory problem in its recent announcement of Displaywrite IV, Walker noted. In a section of the announcement called "PC Network limitations," IBM stated that, due to the memory requirements of Displaywrite IV and the PC Local Area Network program's server-level software, it may not be possible to access all the functions of both programs simultaneously. "Usually, when things are put in about 'considerations,' there are severe problems," Walker said.

Users trying to run random-access memory (RAM) resident programs are also hitting memory and system contention problems on the network. Leading Edge Products, Inc.'s word processing program won't allow users to invoke RAM resident programs, according to Dennis Passovoy, executive vice-president of network reseller Data-LAN, Inc. of Canoga Park, Calif.

"Leading Edge basically hijacks the network," said Passovoy, by performing low-level redirection functions that override normal MS-DOS commands.

Passovoy tested Leading Edge with a RAM-resident print spooler program and found it would not work. Several such spooler programs are on the market and are designed to overcome a common printing shortcoming among network versions of applications.

In many of these programs, users must initialize the spooler before bringing up the application program. After entering print commands from inside the application, users must then exit to close the spooler. RAM-resident spooler programs allow users to hit a hot key that creates a window. In that way, a user can turn the spooler on and off without leaving the application.

Several word processing packages, and even a few network operating systems, have a spooler feature that closes the spooler if there is no activity for a period of time. However, users still have to initialize the spooler before entering the program, and Passovoy said this makes the RAM resident programs more attractive.

When a network operating system and RAM resident applications contend for the same space in memory, one of them is likely to be blown out of memory, Walker said. And, for the time being, the problem cannot be solved by extended memory boards. Most network operating systems don't recognize these boards, he said.

Despite current problems, most consultants said they believe first-generation network software works reasonably well. And those who were contacted say they are certain users can fix most problems or find ways to work around them.

Furthermore, solutions to the problems of networked software will likely be incorporated in future releases.

▶ SATELLITE COMMUNICATIONS

House to mull feds' role in launches

Repercussions from Challenger explosion continue to affect deployment; near-term industry alternatives being sought.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — The U.S. House of Representatives Subcommittee on Space Science and Applications is expected to hold hearings this week to begin crafting a new federal government policy on satellite launchings.

Subcommittee members will explore possible federal government involvement in the development of Expendable Launch Vehicles (ELV) as a new method for deploying satellites in space. These vehicles would be unmanned rockets similar to the ones used prior to the development of the manned space shuttle. The need for the federal government to reassess its role in the launching of both governmental and commercial communications satellites comes in the wake of the January explosion of the Space Shuttle Challenger.

The cost of starting any new launch program is certain to be passed on to communications users. However, at least for now, there remains a glut of satellite capacity on the market, and as a result, transponder space remains relatively inexpensive, according to Phil Arst of Communications Strategies Associates, Inc., a consulting firm that helps users plan satellite networks.

Satellite industry consultant Walter Morgan of the Communications Center in Washington, D.C. disagrees, saying that satellite capacity is being used up fairly rapidly. He claims all available Ku-band capacity will be in use by 1988.

The suspension of the shuttle program has sent the satellite industry into a tailspin. Industry members are demanding the government rethink its role in satellite launches. However, at a time when government action is needed most, Reagan administration officials are strongly advocating the withdrawal of the National Aeronautics and Space Administration (Nasa) and its space shuttles from the commercial satellite launch arena.

A recent workshop held by the American Institute of Aeronautics and Astronautics (AIAA) and attended by satellite manufacturers, owners, operators and users, outlined four possible options for the satellite launch business.

One is a return to the preshuttle disaster situation in which Nasa provided launch services for commercial satellites. That position is favored by communications users, according to John Logsdon, vice-president of public policy for the AIAA. Arst also favors that option. "The advantage of the shuttle is that it is manned and permits the repair and retrieval of satellites in orbit," Arst said.

As another alternative, the government could encourage and subsidize the development of commercially available ELVs, said Joel Alper, president of Comsat Corp.'s Space Communications Division in Washington, D.C. This seems to be the most likely short-term scenario, as the U.S. Air Force has already begun planning a fleet of ELVs for its own use.

> *"The cost of starting any new launch program is certain to be passed on to users."*

According to Jerome Simonoff, vice-president at Citicorp Industrial Credit, Inc., a third option is the creation of a joint launch venture between government and industry similar to the French organization Arianespace, Inc. Proponents argue that governments such as the French and Chinese are heavily funding joint ventures, making it increasingly difficult for a purely commercial U.S. venture to compete.

As a fourth alternative, Ford Aerospace proposed the creation of a government-backed, commerical insurance program protecting satellite service providers. ◪

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INDUSTRY UPDATE

Philippine telecom firms near bankruptcy?

MANILA, Philippines — Six of the Philippines' seven telecommunications carriers say they face bankruptcy if the government exercises its right to claim back taxes from them worth some $60 million for the period between 1975 and 1984. The Philippine Supreme Court said the carriers owed the government retroactive taxes, but the carriers recently told the National Telecommunications Commission that the taxes would force them out of business and would cost roughly 20,000 workers their jobs. (CW International News Service, *Computerworld Asia*)

▶MARKET RESEARCH

CO switch sales soared in 1985

AT&T gains ground at Northern Telecom's expense, but rapid growth may not last.

BY MICHAEL FAHEY
Staff Writer

FRAMINGHAM, Mass. — The number of central office switches shipped last year to local telephone operating companies in the U.S. was nearly 60% higher than the total for 1984. But, according to a study released recently by International Data Corp. (IDC), a market research firm headquartered here, that level of growth in the central office switch market may be short-lived.

AT&T was the largest beneficiary of the increase in central office switch sales during 1985, outselling rival Northern Telecom, Inc., which was the 1984 sales leader, the report said. AT&T shipped some six million lines in 1985, compared with about 2.5 million shipped in 1984.

In 1984, Northern Telecom held more than 52% of the overall U.S. market for digital central office switches, compared with more than 28% for AT&T. Early last year, AT&T overtook Northern Telecom in digital line shipments. In 1985, AT&T held more than 45% of the market, compared with 38% for Northern Telecom, IDC's report said.

Host of vendors challenge GTE

GTE Corp. held on to its third place position in the switch market, but a host of other vendors, including CIT-Alcatel, Ericsson Information Systems, Inc., ITT Corp., Siemens Communications Systems, Inc. and NEC America, Inc. have begun to challenge GTE for the third spot.

Despite the 60% increase in the number of central office switches shipped, the total installed base of switches increased only 1% over 1984, the study found.

According to IDC's study, the bulk of the more than 1,500 new switches shipped in

See **Central office** page 10

▶ FIBER VS. SATELLITE

Fiber optics closing the gap

Satellite providers vie for a competitive edge.

BY KARYL SCOTT
Washington, D.C. Correspondent

CLARKSBURG, Md. — Fiber-optic telecommunications systems pose an ever-increasing competitive threat to satellite service providers.

That fact of communications industry life is not lost on John V. Evans, vice-president of research and development at Comsat Laboratories, a division of Communications Satellite Corp. (Comsat).

During a recent tour of Comsat Laboratories here, Evans told *Network World* that Comsat will enhance its satellite technology over the coming decade to remain competitive with AT&T, MCI Communications Corp. and other carriers deploying long-distance fiber links throughout the country. "We have to devise a way to remain price-competitive and to induce customers to use our facilities as much as possible," Evans said.

> *"The longer term prospect for satellite systems is not hopeful."*

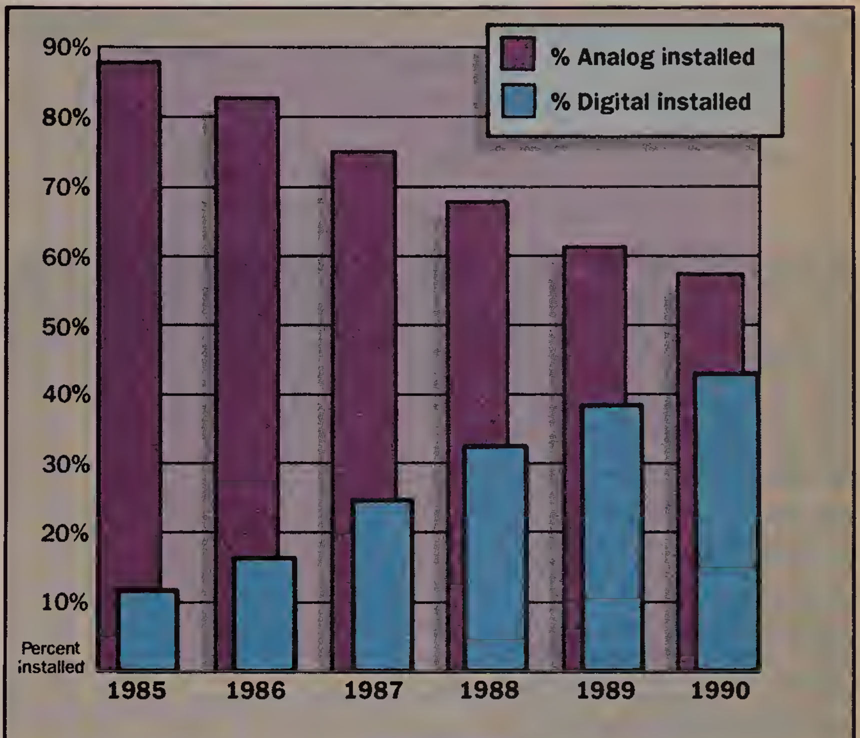
Comsat will phase out its large and very expensive — $10 million each — master earth stations by the end of this decade and replace them with smaller antennas, which can be deployed in more locations around the country. Smaller earth stations and narrow beam satellite transmission, currently being developed by the company, will create a more dispersed network, "with the ability to bring the traffic closer to the customer premises and thus allow the user to bypass terrestrial networks," Evans said.

Narrow beam technology now being developed in conjunction with the National Aeronautics and Space Administration ("Nasa airs 'Switchboard in Sky' plan," *Network World*, July 14) is expected to give the satellite industry a competitive boost in coming years.

These narrow beam signals will scan the earth and will have the capability to

See **Fiber** page 10

Central office switch forecast analog vs. digital lines 1985-1990



SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

PROFIT AND LOSS

Timeplex, Inc. announced revenue of more than $119 million for the fiscal year ended June 30. The figure represents a nearly 25% increase over the company's fiscal 1985 revenue of $96 million. Fiscal 1986 profit was more than $9.5 million, compared with 1985 profit of more than $8.8 million. Earnings for 1986 were $1.09 per share, compared with $1.02 last fiscal year.

Timeplex enjoyed a 16% boost in fourth-quarter revenue in fiscal 1986, with $30.5 million, compared with $26.2 million for the previous year. Profit for the fourth quarter, however, dropped some 22% compared with the similar period last year.

Micom Systems, Inc. experienced a slight drop in first-quarter revenue. Revenue for the first quarter ended June 30 was nearly $46.1 million, down from more than $46.4 million for the similar period last year. Profit dipped more significantly, dropping from nearly $2.4 million in the first quarter of fiscal 1986 to more than $1.6 million this year.

Micom President Roger Evans attributed the dip to slower than expected sales of its private branch exchange.

Tellabs, Inc. of Lisle, Ill., reported revenue of $27 million for the second quarter, down slightly from last year. For the first six months of 1986, Tellabs posted $54 million revenue, up more than 7% compared with the similar period last year.

Net income plummeted 45% to $1.5 million in the second quarter, compared with $2.7 million in the second quarter of 1985. Profit for the first half of the year was $3.6 million, down nearly 10% from 1985.

Sun Microsystems, Inc. announced revenue of nearly $77 million for the fourth quarter of its 1986 fiscal year, which ended June 30. The figure marks a 106% increase over fourth-quarter 1985 revenue.

Net income for the quarter was nearly $6 million, a more than 180% increase compared with the similar quarter last year. Sun's revenue for the entire fiscal 1986 was $210 million, an 82% increase over the fiscal 1985 level of $115 million. Net income for fiscal 1986 was nearly $12 million, compared with $8.5 million last year. Earnings per share for the year were 46 cents.

Central office from **page 9**

1985 were ordered by local telephone companies to replace existing analog switching systems. That, IDC said, reflects the local operating companies' need for modern digital switching systems to provide competitive services for their customers.

Equal access requirements, which are part of the AT&T divestiture plan, stipulate that the regional Bell operating companies provide local customers with equal access to all available interexchange carriers by Sept. 1 of this year. These requirements have played a major role in the rising demand for digital switching equipment, the report said.

Divestiture also freed the local operating companies from the restriction of buying equipment only from AT&T. This led to greater competition among switch manufacturers and lowered the cost of equipment.

The local carriers' increased use of digital switching equipment also reflects the carriers' efforts to prevent large users from turning to PBXs, tandem switches and other ways of bypassing the local service loop.

The rapid increase in central office switch shipments seen last year probably will not continue, according to the report. The compound annual growth rate of digital lines shipped for the next five years will be 4.6%, according to IDC's projections.

This development may benefit users, according to the study. Users may be able to pressure RBOCs to add new features to Centrex service by exploiting the carriers' fear of losing business as a result of the increased use of customer premises-based equipment. This strategy could force the carriers to add custom calling features such as call waiting and call forwarding, as well as increased data transmission capability.

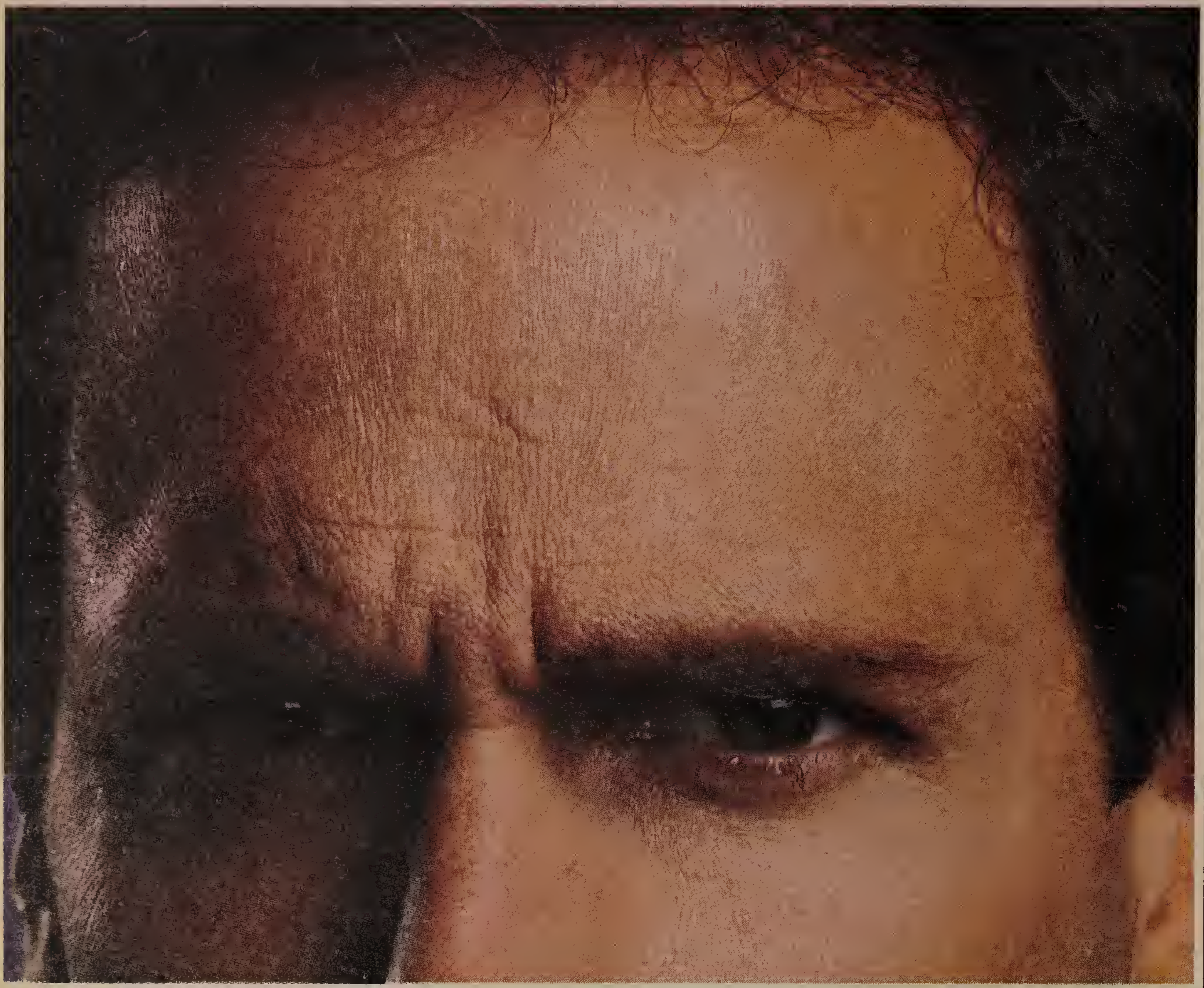
According to the IDC study, the development of the Integrated Services Digital Network will have a major impact on central office switch technology. Just what that effect will be is not yet clear, the report said.

The big question regarding the implementation of ISDN is where intelligence will be placed within the network.

Some industry observers, the report said, believe that the network will be capable of providing all of the services necessary to implement ISDN. Other observers believe that at least in the early stages of ISDN service, customer premises equipment will play a crucial role in ISDN implementations.

> *"Equal access requirements have played a major role in the the rising demand for digital switching equipment, the report said."*

> *"The rapid increase in central office switch shipments seen last year will not continue."*



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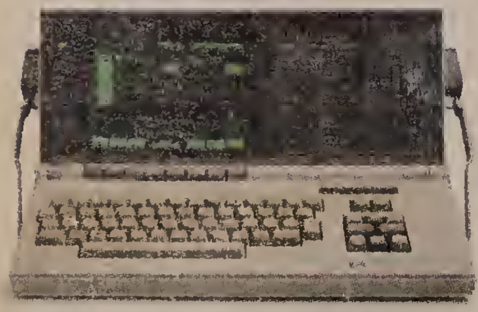

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be directed to narrow, specific geographic regions, in contrast to the current wide beam technique, which sends the signal to a fixed, wide area of the globe.

The longer term prospect for satellite systems is not hopeful, however. Ultimately, fiber optics will make point-to-point satellite communications obsolete in the domestic market, Evans said. "In the next couple of decades, as fiber is deployed all the way to the customer premises, you will see a decline in the use of satellites. Private satellite networks will also become less competitive in the coming decade," Evans predicted.

The international satellite market and point-to-multipoint satellite applications should continue to retain market share in years to come, Evans noted.

Multipoint transmission, which involves broadcasting a single message to multiple recipients, will continue to be more economical than sending that same message over multiple transmission lines.

TELECOM TRENDS

Household phone takes to the rails

First, there was the household telephone. Then came the business phone. It took to the air as Airfone. And now it's popping up on trains as Railfone. Railfone, Inc., a subsidiary of Airfone, Inc. in Oak Brook, Ill., announced recently that it will install public telephones in Amtrak Metroliner trains that run between Washington, D.C. and New York. Calls will cost $5 for the first three minutes and $1 for each additional minute. The phones will be installed in railcar phone booths.

▶ ANALYSIS

Fall of the PBX?

Local switches may fill the voice/data slot.

BY JOHN DIX
Senior Editor

The kingdom of the monolithic digital private branch exchange may fall to departmental switches capable of supporting voice and high-speed data.

Just as PBXs off-load switching responsibility from central office switches, departmental systems — call them departmental voice/data processing (DVDP) systems — may someday off-load PBXs, creating a third switching tier. The advent of DVDPs could hasten the integration of voice and data and limit the size and cost of central PBXs by relegating them to the control of departmental systems.

Northern Telecom, Inc.'s Meridian DV-1 is the first true departmental voice/data system. The DV-1, which is capable of standing on its own and supporting voice/data workstations with a single wire pair, also provides local voice switching and file serving for data applications.

Northern Telecom may envision the day that these systems are linked together and used in place of one of its larger switches. But today, the company is only hawking the DV-1 as a switch adjunct for special applications.

The lukewarm market reception Northern Telecom's DV-1 has met is evidence that the world is still not ready to trade in its large centralized voice switches for snazzy departmental systems. But the advent of true voice/data applications may create a need for these new switches.

These applications, and the systems they run on, will have to be capable of storing and manipulating voice as a digital data file. This would make it possible to integrate annotated text messages or data applications with voice notes. Data-to-voice conversions will be possible, and eventually voice-to-text may become feasible.

While large PBXs would be just as capable of supporting these functions as departmental switches, their nature may

See **DVDPs** page 12

▶ ADVANCED SERVICES

S. Central extends Touchstar trials

BY MICHAEL FAHEY
Staff Writer

BIRMINGHAM, Ala. — South Central Telephone Co. recently began offering a host of advanced calling services to business and residential customers in Natchez, Miss., as part of a continuing trial of its Touchstar Services. The BellSouth local company began offering Touchstar Services on a trial basis in Orlando, Fla., in 1984.

Customers in Natchez will have a choice of six Touchstar services, each of which boasts a voice interaction feature that instructs users on how to activate services. The company expects the Natchez trial to last two years.

The services include:

- Call return/repeat dialing, which allows a customer to automatically call either the number of the most recent caller or the last number the user has dialed.
- Distinctive alert, a feature that alerts a customer that one of six previously specified callers is phoning.
- Selective call forwarding, which enables a customer to transfer calls from up to six callers to another number.

Party line customers, coin telephones and private branch exchanges are excluded from the service, which will not work with long-distance calls. Pricing for the services ranges between $2 and $5 each per month. Customers can order a package of services for $13 a month.

▶ PRICING

Sprint cuts rates

Long-distance services affected.

BY MICHAEL FAHEY
Staff Writer

KANSAS CITY, Mo. — US Sprint Communications Co., recently formed by the merger of GTE Sprint Communications Corp. and US Telecom, Inc. gave its new aggressive marketing campaign added punch last week. The company introduced a one-year, 10% price reduction for all new business and residential dial-up long-distance service.

Although the discount rates are attractive on the surface, analysts warn the scheme may be a loss leader designed to attract new customers. Once baited, customers may be subject to rate changes that obviate the discounts.

Dubbed the US Sprint Charter Customer Offer, the new scheme is offered to all new customers or existing users adding US Sprint dial-up services. The 10% discount is available to customers who sign up before Sept. 30. It will go into effect Oct. 30 and extend for one year.

The rate reduction follows US Sprint's first tariff filing as a unified company. The tariffs went into effect Aug. 1. Those tariffs include rates that are, for some services, as much as 35% below similar AT&T prices, US Sprint claimed. Wats tariffs are described as being priced 17% below comparable AT&T Wats service. The latest reduction would make these Wats services up to 25% less expensive than AT&T Wats.

In July, US Sprint began an extensive television advertising campaign touting its planned national fiber-optic network. The advertising campaign, coupled with the reductions in long-distance costs, led several analysts to describe US Sprint's strategy as a two-pronged effort designed to compete with rival AT&T

See **Sprint** page 12

CROSS TALK

JOHN DIX

How sinister the RBOCs?

In its ongoing fight to keep the regional Bell holding companies at bay, the North American Telecommunications Association (Nata) recently updated and distributed a paper arguing against the further deregulation of the local telephone companies.

Although the piece — entitled *Save the American Ratepayer: How American Consumers Are Footing the Bill For Regional Phone Company Expansionism* — borders on fanaticism, it raises some interesting points.

The heart of the matter is the age-old concern about cross-subsidization. Nata contends the local telephone companies are using monies generated by regulated, monopolistic local service to underwrite competitive ventures. As an association of independent communications equipment manufacturers, Nata is principally concerned about the power the divested Bell operating companies will bring to bear in private branch exchange and other markets if further deregulated.

Nata supplied these alleged facts:

- Local phone rates across the country have increased $5.2 billion since 1984, and $1.7 billion worth of rate hikes are pending. The companies have also reaped $19.9 billion in access charges paid by long-distance carriers. (Nata did not specify how much the former BOCs lost in AT&T cross-subsidies.)
- The RBOCs have earned record profits since 1984, about $1 billion per year per company. Their roughly 13% profit margins are three to four times higher than the U.S. industrial average.
- The RBOCs are using these profits to fund what Nata calls a "worldwide acquisition binge." Together, the companies have spent an estimated $13 billion to acquire new companies and fund new ventures. "Local phone companies are so far-flung that they're now involved in real estate in Dallas, Yellow Pages in Australia and mobile phone service in Costa Rica," Nata says.
- Collectively, the seven regional Bell holding companies have lost an estimated $1 billion through new competitive subsidiaries.

Nata makes no bones about it. When considered together, these facts add up to only one conclusion. "The RBOCs are using local exchange profits to subsidize their competitive subsidiaries," Nata writes. It goes on to say that the "Bell companies' expansionism is occurring with the acquiescence of regulators who have abdicated their responsibility to protect consumers and independent vendors."

DVDPs from **page 11**

slow down, if not prevent, that evolution. The roadblock is the same one that prevents corporations from using their PBXs to support data today: Why install or upgrade an entire switch for a feature only a few employees may use?

Although some switch manufacturers have made it possible to add features incrementally through applications processors, the extent of a switch's ability to support data is determined by basic switch design. Design decisions take into account, among other things, bandwidth requirements and differences between the call-holding times of data and voice conversations.

It follows that corporations will rarely install PBXs packed to the teeth with data capabilities if they are uncertain about future use. In other words, acceptance of integrated voice/data applications would probably be hastened if data capabilities were deployed as needed on a departmental basis, instead of using large, costly centralized systems with the same features.

The evolution of local networks backs that hypothesis. Local networks were once envisioned as being installed throughout buildings. When reality caught up with the analysts charting their growth, they devised the term work group, or departmental networks, to describe the 10- to 20-node networks actually being installed.

On the face of it, the comparatively low cost of departmental networks would appear to be their raison d'etre, but the work group concept is probably even more important. Work groups have similar needs that may be unique when compared with other company departments. A small network with a file server or departmental processor can be tuned directly to the work group's needs. An engineering computer-aided design and manufacturing network is a good example.

Departmental voice/data systems may be justified on the same basis. Rather than try to implement a special voice/data application for a particular department on a centralized system, it makes better sense to satisfy the requirement by putting the technology directly where it is needed.

This concept adds the idea of voice support to traditional distributed processing, a concept that, when associated with file serving, is now called departmental computing. Rolled together, the concepts add up to DVDP.

With DVDP, all local processing and voice switching is performed by the local device. As with the departmental processor theory, which says intermediate systems will off-load host requirements, DVDPs would off-load the PBX and the host processor. When required, the DVDP passes data and voice call requests onto other DVDPs or to a small central PBX that only handles incoming and outgoing calls.

Ian Angus, president of the Tele-Management Group, Inc., a PBX consulting firm in Toronto, said the concept is feasible but would require complex planning. "It would be hard to calculate whether there would be a significant payoff in reducing the central PBX traffic load," he said. Actual savings realized by downsizing a central PBX could probably only be calculated after the fact.

George Colony, president of Forrester Research, Inc., a research and consulting company in Cambridge, Mass., was also skeptical. "The reason you distribute a departmental computer is because the mainframe isn't getting the job done," he commented. "Is the PBX not getting the job done?"

Colony does anticipate, however, that functional applications that integrate voice and data will crop up within the next five years and appeal to specific departmental needs.

"Those departments won't be able to get the same service from central PBXs," he said. "That will provide the incentive to find other solutions."

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Sprint from **page 11**

on quality of service, while underpricing the long-haul leader on dial-up service.

"Sprint has had an image problem in the past," said Robert Self, president of Market Dynamics, a New York-based consulting company. "What they've done is gone out and tried to change everything at once. It is a very aggressive and very attention-getting strategy."

Page Montgomery, vice-president of Economics and Technology, Inc., a Boston-based consulting company, said he believed that US Sprint would not have much difficulty absorbing any revenue reduction resulting from the discount.

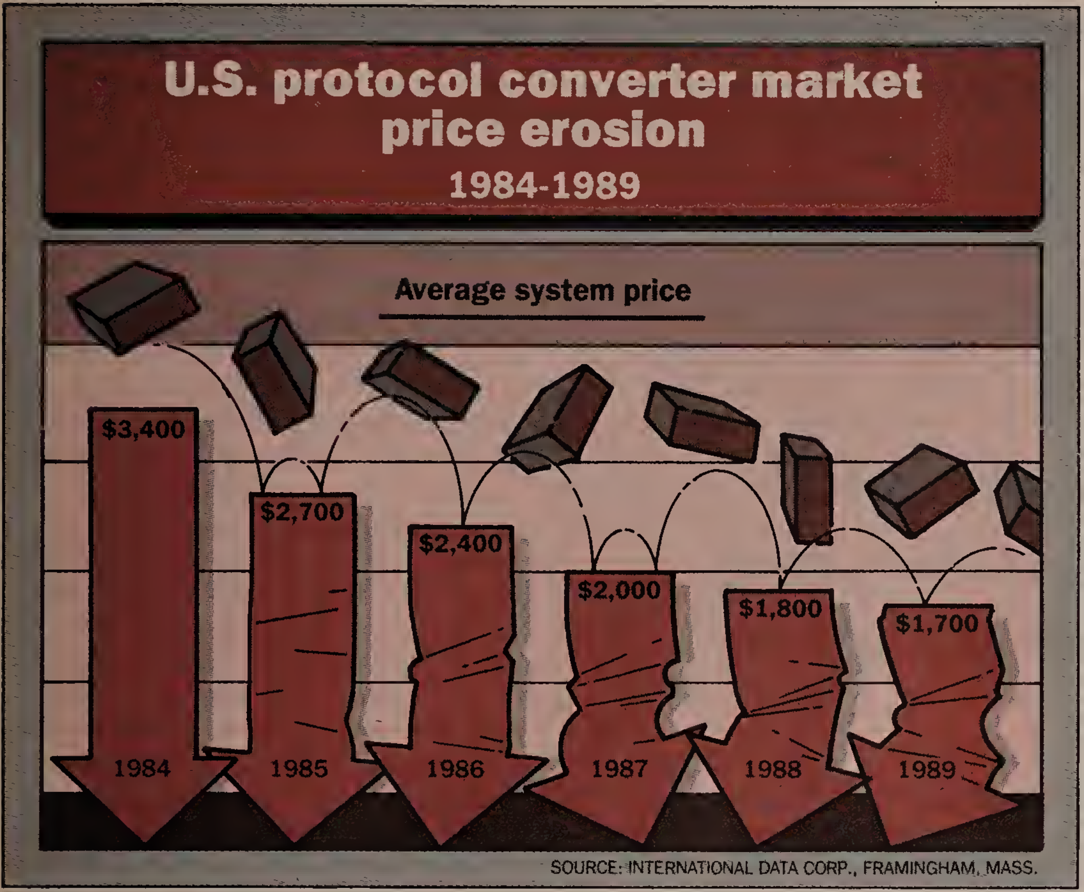
"I don't think they will have any trouble sustaining that kind of promotional price," Montgomery said. US Sprint is pricing new customers at the cost of adding them to the network, and it is counting on the expanded customer base to generate future revenue, he said.

In reality, Montgomery said, by the time the year passes, adjustments in access charges and rates may actually offset discounts, but the company will have the customers on board by then.

DATA DELIVERY

Infostream 1500 certified for AT&T M24

Infotron Systems Corp., based in Cherry Hill, N.J., announced that its Infostream 1500 T-1 multiplexer has been certified for use with AT&T's M24 and Digital Access Cross Connect System/Customer Controlled Reconfiguration T-1 offerings.



SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

▶ PROTOCOL CONVERTERS

Vendors face market slide

As sales plummet, ranks dwindle.

BY PAUL KORZENIOWSKI
Senior Editor

The evolution of the communications market is putting the squeeze on protocol converter manufacturers, and analysts expect a few companies to be wrung out of business.

When asked about the future of protocol converter vendors, Vince Barrett, vice-president at the Stamford, Conn.-based market research firm Gartner Group, Inc., replied, "It's not a pretty picture."

A protocol converter is a dedicated device that takes one type of data stream or code and translates it to another stream or code. A market for these devices emerged in the mid-1970s. Users were working with data in two diverse formats: IBM's Ebcdic and Ascii, which was used by most other computer manufacturers. The protocol converters enabled users to mix the two types of code.

Growth in the protocol converter market was robust through the end of the 1970s. But the bottom began to fall out as personal computers were introduced. Along with microcomputers came other technical advances, such as large-scale integration, which enabled vendors to place more processing power in smaller devices. Rather than a dedicated box, personal computer expansion boards supplied protocol converter features.

The market dip will no doubt be exacerbated by IBM's recent announcement of its new 3174 cluster controller. The 3174 enables users

See **Protocol** page 14

DATA DIALOGUE

DONALD CZUBEK

ECF poses new question for applications designer

Just when most industry observers were convinced that IBM would focus on Advanced Program-to-Program Communications (APPC) as the communications base for distributed data processing applications, IBM announced another alternative — Enhanced Connectivity Facilities (ECF).

ECF was part of the deluge of announcements made on June 16. It is very significant because it poses a question for the designer of distributed applications: Which connection option should I choose, APPC or ECF?

Let's look at ECF and examine what it is designed to do. ECF enables remote workstations — initially the IBM Personal Computer — to access mainframe-based resources, such as data bases and virtual disks and printers, and to perform file transfer operations. None of these functions are new to the personal computer world. What is new is the fact that IBM has standardized the way these functions will be performed. With ECF, IBM is extending mainframe operating system resources to the personal computer user. In the past, for instance, data base vendors provided proprietary links between their mainframe software and personal computers. Countless file transfer protocols have been devised for micro-to-mainframe communications as well.

With ECF, IBM has introduced a standard interface between the users of personal computers that request services and the mainframe-based servers that provide the services. This standard interface is called the Server-Requester Programming Interface (SRPI).

IBM's initial ECF products include personal computer software. The software consists of a requester application that enables personal computer users to request services such as data base access, file transfer and virtual file, disk and printer access. A user can also execute programs on the mainframe.

On the mainframe, ECF support is embodied in TSO for MVS users and within CMS for VM users. The SRPI interface is being implemented in both TSO and CMS. The other mainframe component supplied by IBM will

See **ECF** page 14

Czubek is vice-president at Communications Solutions, Inc., a San Jose, Calif., communications software vendor.

▶ VOICE/DATA INTEGRATION

Winners and losers

BY MICHAEL FAHEY
Staff Writer

Users had better be ready to integrate their voice and data communications systems.

Integrated Voice/Data Communications, a report prepared by Input, a Mountain View, Calif., market research company, said users that are prepared for the new technology will reap substantial benefits, while those that are not ready to tie together voice and data activities will experience a number of problems.

According to the study, a properly integrated voice and data communications system will enable organizations to reduce operating costs, increase information flow and expand the flexibility of their organization when responding to competition.

Within organizations that use integrated communications, benefits will be realized by managers who perform information system and communications planning, the study found. In addition, integrated communications systems will have positive consequences for technicians and operators who maintain and run the systems.

The report said the increased use of local-area networks to support resource sharing has helped stir interest in integrated communications. Moreover, according to the study, new developments such as baseband and broadband chips and high-speed optimized switches have helped resolve problems in creating integrated voice and data communications networks.

The study also noted major private branch exchange design developments that focus on combining voice and data. Included was the development of high-speed PBX-to-computer interfaces and high-speed links connecting PBXs to microwave and satellite transmission systems.

Despite the optimistic predictions about the benefits of voice and data integration, the 117-page study analyzes instances where separate voice and data networks will remain preferable to integrated communications networks.

Integrated Voice/Data Communications is available for $995 from Input, 1943 Landings Drive, Mountain View, Calif. 94043 (415) 960-3990.

ECF from **page 13**

be the servers that provide services requested by the personal computer users.

The distributed processing environment supported by ECF may sound like APPC, but there are important differences between the two approaches. APPC is designed to be a generalized program-to-program communications protocol. Its purpose is to couple two geographically separated application programs and allow them to execute as one.

That's not what ECF provides. ECF allows remote access of specific services such as data bases and virtual devices, not generalized program-to-program communications. Another important feature of the announced ECF products is that they do not require Systems Network Architecture LU 6.2 support. Instead, they use 3270 emulation protocols. That means they do not require the use of CICS on the mainframe and can be linked with any MVS or VM host.

Which distributed applications are suited to APPC and which are better supported by ECF? It depends on whether the user is distributing the application programs himself or just accessing distributed resources such as virtual disks and data bases.

If the application programs are being split geographically, the user probably needs APPC to tie them together and coordinate the processing between remote sites. If the user simply needs to access mainframe resources from a personal computer, ECF should fill the bill.

ECF and its SRPI interface should become the de facto standard for personal computer-to-mainframe resource sharing in the IBM world.

APPC's and ECF's future roles

Support for ECF will spread from the personal computer to other remote IBM and non-IBM workstations that require access-to-mainframe resources. And personal computer software vendors will use SRPI to link their products with mainframe counterparts.

Both APPC and ECF will have important roles in future distributed processing systems.☒

Protocol from **page 13**

to attach Ascii terminals directly to the controller, a new feature from IBM. "The black box market will change significantly due to the IBM announcement," Barrett noted. "There is little reason for an SNA shop to work with any device other than an IBM 3174."

Vendors' immediate response to the IBM announcement was to lower prices on existing protocol converters. A number of manufacturers cut prices so that a one-port protocol converter now costs approximately $1,000. Prices for four-port models were chopped by as much as 25%.

Users should expect further price cuts. International Data Corp., a Framingham, Mass.-based market research firm, said the average price for an eight-port protocol converter will fall from $3,400 in 1984 to roughly $1,700 in 1989.

Price cuts seem to be only a stopgap measure, however. Analysts agree that protocol conversion manufacturers must make some dramatic changes in their product lines. Yet all is not bleak for vendors. IBM's 3174 protocol conversion feature is not scheduled to be available until the middle of next year, and that lag may give vendors time to revamp their lines.

Manufacturers can go in either of two directions, according to Patrick Gordon, an analyst with the Yankee Group, a Boston-based market research firm. They can supply special conversion functions or target niche markets.

Gordon said that special items could include support for IBM's LU 6.2 protocol. He warned these features may entice few users. "Most users are interested in simple terminal emulation and not in a lot of extra bells and whistles," he said.

Gartner Group's Barrett noted that IBM left a few holes in its IBM line. For example, vendors could offer conversion capabilities for remote job entry products, a niche that doesn't seem to hold Big Blue's interest.

Supplying this type of conversion is more complex than traditional applications and requires significant up-front investments, Barrett added. Protocol converter companies are relatively small and may already be strapped for cash.

Consequently, analysts expect a number of these companies to begin courting larger companies. Some could look for OEM agreements as a means of stabilizing slipping profits. Protocol conversion capabilities are a more appealing sale as an integral part of a computer system, rather than an amenity. KMW Corp. in Austin, Texas, has shifted its sales so that close to half of them are to other vendors. The company expects its OEM sales to continue to grow.

Acquisition presents a second possibility. Earlier this year, two major protocol converter players sold out. Telematics International, Inc. purchased Protocol Computers, Inc., and Lee Data Corp. bought Datastream Communications, Inc. Given the declining profits picture, additional consolidation seems likely.☒

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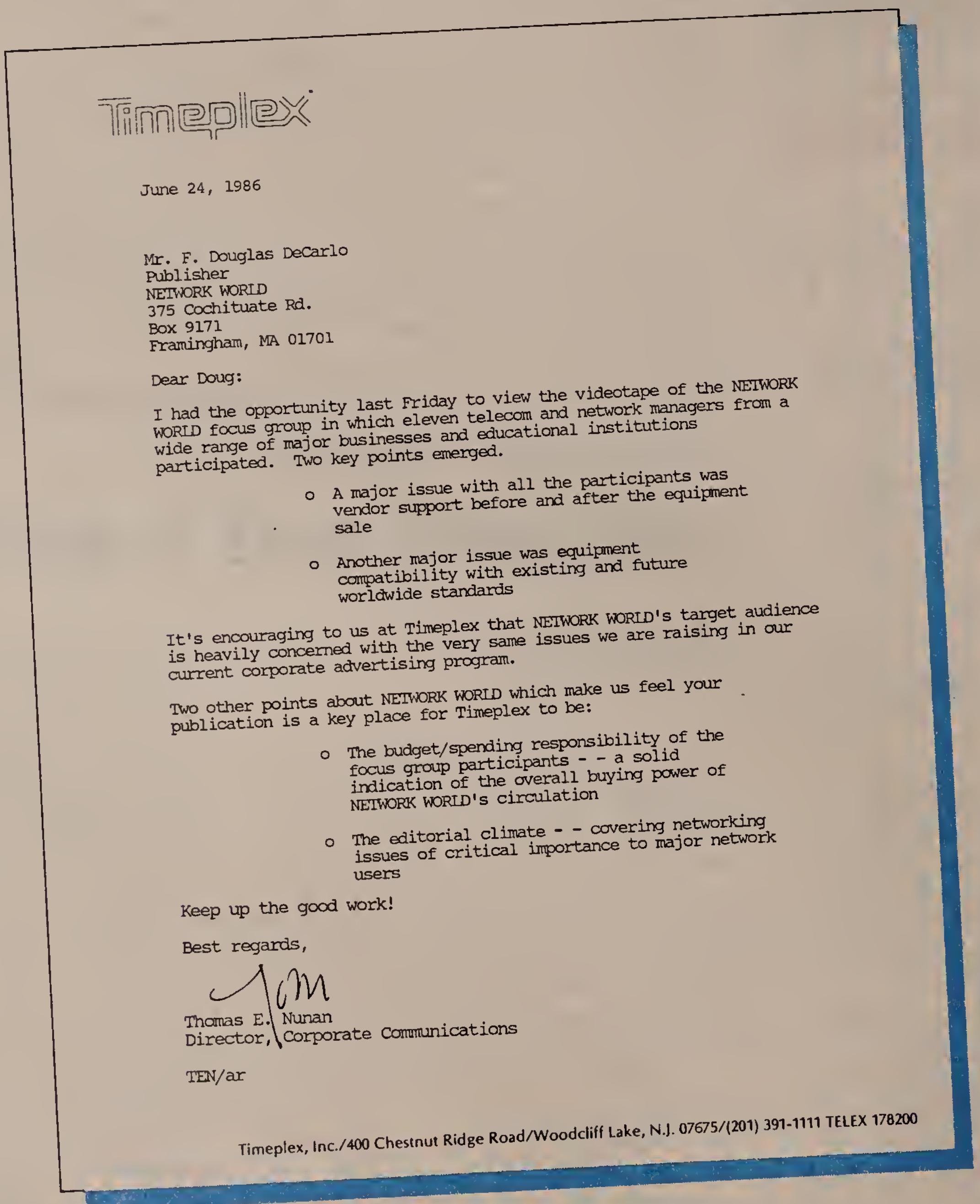
Thomas E. Nunan, Director, Corporate Communications, Timeplex



Timeplex

June 24, 1986

Mr. F. Douglas DeCarlo
Publisher
NETWORK WORLD
375 Cochituate Rd.
Box 9171
Framingham, MA 01701

Dear Doug:

I had the opportunity last Friday to view the videotape of the NETWORK WORLD focus group in which eleven telecom and network managers from a wide range of major businesses and educational institutions participated. Two key points emerged.

- A major issue with all the participants was vendor support before and after the equipment sale
- Another major issue was equipment compatibility with existing and future worldwide standards

It's encouraging to us at Timeplex that NETWORK WORLD's target audience is heavily concerned with the very same issues we are raising in our current corporate advertising program.

Two other points about NETWORK WORLD which make us feel your publication is a key place for Timeplex to be:

- The budget/spending responsibility of the focus group participants - - a solid indication of the overall buying power of NETWORK WORLD's circulation
- The editorial climate - - covering networking issues of critical importance to major network users

Keep up the good work!

Best regards,

Thomas E. Nunan
Director, Corporate Communications

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FACTORY COMMUNICATIONS

Spacetech postponed

Repercussions from the Space Shuttle Challenger tragedy have been felt in the manufacturing world. The Spacetech '86 Conference and Exposition, slated for Sept. 15 through 17, 1986, has been postponed until at least 1988, the event's cosponsors recently announced.

▶ FACTORY NETWORKS

MAP users rallied

Focus is on process manufacturers.

BY BOB WALLACE
Senior Writer

TACOMA, Wash. — Weyerhaeuser Co. is struggling to generate interest in the Manufacturing Automation Protocol within some of the nation's largest process manufacturing corporations.

Weyerhaeuser is a member of the MAP Process Industry Initiative and is represented on its public relations subcommittee. The subcommittee's mission is to develop awareness of the emerging MAP standard within the process manufacturing industry. While Weyerhaeuser does not provide technical networking expertise to users, the company has been actively recruiting manufacturers to join the MAP Process Industry Initiative.

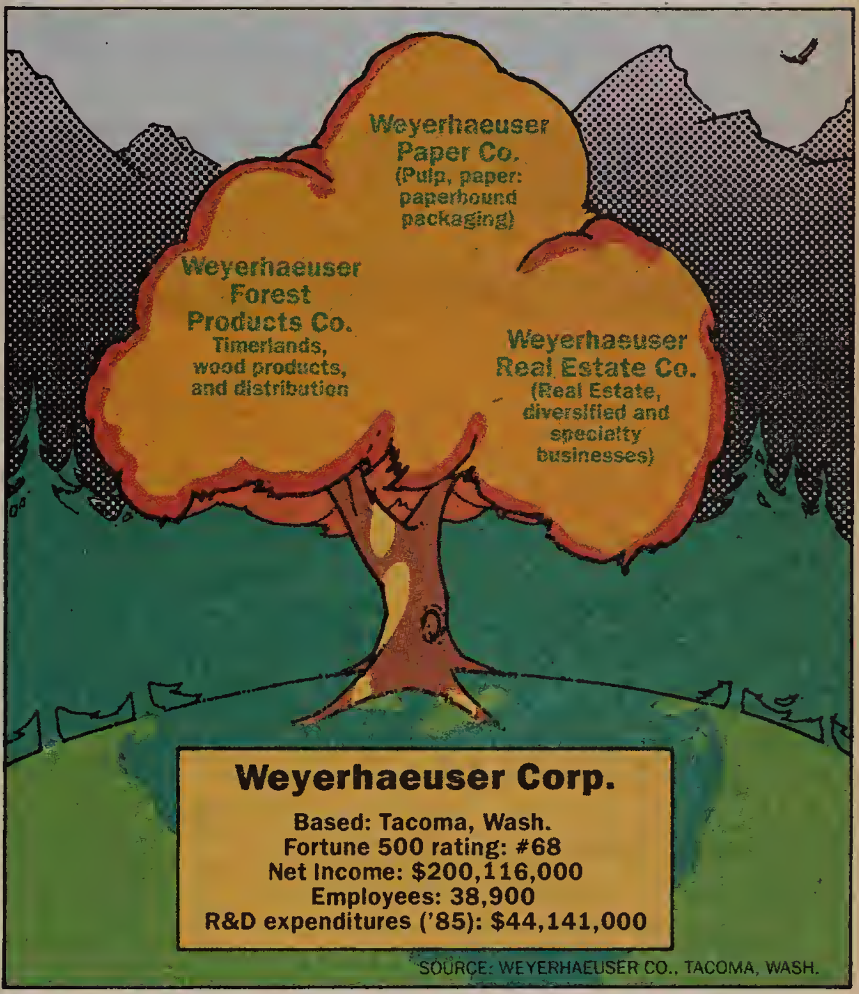
The MAP Process Industry Initiative is a working group established under the MAP/Technical and Office Protocol Steering Committee. The user/vendor group includes such companies as Proctor & Gamble Co., EI DuPont Co., Exxon Corp., Weyerhaeuser, InLand Steel Co., Tennessee Eastman Co., The Foxboro Co., Honeywell, Inc. and Fisher Controls International.

The pulp and paper products producer may soon lead other process manufacturers by example. The company is currently considering implementation of a pilot MAP network that would be used to boost awareness of the factory communications standard within the corporation's divisions. Weyerhaeuser also plans to join Procter & Gamble and other user companies in setting up a MAP process manufacturing line at the Autofact '87 conference and exposition ("Procter & Gamble rallies user force," *Network World*, Aug. 4).

Dan Miklovic, Weyerhaeuser's MAP project manager, explained that the coalition the company and other users such as

See **Weyerhaeuser** page 16

Weyerhaeuser corporate profile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Weyerhaeuser Corp.
Based: Tacoma, Wash.
Fortune 500 rating: #68
Net Income: $200,116,000
Employees: 38,900
R&D expenditures ('85): $44,141,000

SOURCE: WEYERHAEUSER CO., TACOMA, WASH.

FACTORY FACTS

BOB WALLACE

Computer integration still a pipe dream for many real-life factories

Many of the country's largest manufacturers will not be able to wed advanced manufacturing concepts to their production facilities in the foreseeable future.

While seminar promoters, manufacturing consultants and the trade press alike speak and write endlessly about the factory of the future, many companies are struggling to upgrade the production plant of the present.

Utopian manufacturing concepts such as Computer-Integrated Manufacturing (CIM), Just-In-Time production scheduling, the unattended factory and the paperless transaction are the subject of everything from seminars to videotaped courses.

When asked when they would be able to realize CIM facilities, several users claimed the concept is expensive as well as impractical for their needs ("CIM steals show, but users still wary," *Network World*, June 30).

The CIM concept calls for all systems in a manufacturing facility to be integrated. This means administration, product scheduling, inventory control and equipment service and maintenance systems would all be linked to the systems that are responsible for the actual manufacturing of a particular product.

Dan Miklovic, MAP project manager for Weyerhaeuser Co., said of the CIM concept: "It's not practical for our company. We will never get to CIM because our manufacturing needs are quite different than those of a General Motors [Corp.]" Weyerhaeuser is years away from the GM vision of the workerless factory, where computers speak to computers and handle all manufacturing functions, he said.

Miklovic is a certified manufacturing engineer in CIM from the Society of Manufacturing Engineers. He has heard much talk of various leading edge manufacturing technologies but questions their applicability to today's manufacturing efforts. "Although CIM is my lifeblood and my profession, I am a realist," he remarked.

"In the year 2000, we may be getting to where the automotive companies are now, in 1986."

The missing link

The MAP project manager explained that the link between scheduling systems and actual manufacturing systems in Weyerhaeuser plants is often human, not hardwired. A factory worker checks what orders are due to be filled in a certain day by accessing this data on a product scheduling system, he explained.

This missing factory link would then key the necessary parameters into the manufacturing system to make the amount of the specified product.

Although this real-life manufacturing case study does not match up well with the concept, those who are pushing advanced manufacturing methodologies should be reminded that concept and reality are two dissimilar entities in today's manufacturing world.

▶ APPLICATIONS

Tandem debuts two processors

CUPERTINO, Calif. — Tandem Computers, Inc. announced a pair of fault-tolerant transaction processing systems designed for manufacturing applications.

The Nonstop EXT10 and EXT25 are tailored to the needs of manufacturers that are distributing their transaction processing at the local or regional level. The two systems are both compatible with other Nonstop systems. The basic system cabinet houses two processors, 8M bytes of memory for the EXT10, 16M bytes of memory for the EXT25 and 128M-byte Winchester eight-inch disk drives.

The systems also feature disk controllers, new cartridge magnetic tape drives, Tandem's recently announced 6105 communications controller, power supplies and an operations and service processor.

A base Nonstop EXT10, which can process 4.3 transactions per second, costs $82,500. Pricing for the Nonstop EXT25, which is 2½ times more powerful than the EXT10, begins at $325,000.

Tandem Computers, Inc., 19191 Vallco Pkwy., Location 4-40, Cupertino, Calif. 95014-2599.

Weyerhaeuser from **page 15**

Procter & Gamble and Eastman Kodak Co. are laboring to form lacks representatives from major process manufacturing firms. "With the exception of Exxon Corp.'s chemical division, no petrochemical companies are involved with this effort," he said. The users group is also seeking backing from members of the mining and metallurgy industry, he noted.

Miklovic's most formidable challenge will be to explain to large manufacturers how they can improve their single vendor manufacturing operations by installing MAP-compatible nets over which a variety of factory gear can communicate. "We are beginning to see process manufacturing system vendors take technological leads in different directions," Miklovic explained. "Using MAP-compatible networks would allow process manufacturers to use products produced by different vendors in a single communications network."

Process manufacturers are keenly interested in the MAP movement and want to acquire a working knowledge of the factory communications standard, Miklovic asserted. The MAP users group's speakers bureau has assembled a small group of speakers familiar with the problems of process manufacturers. The speakers will be pressed into service to help educate these manufacturers about MAP and how it may be used in specific industries.

Weyerhaeuser became actively involved in the MAP movement when the MAP Process Industry Initiative was formed in January. "Our company realized MAP could be used in our pulp and paper products production and could also be used in our discrete parts manufacturing operations," Miklovic recalled.

Miklovic said the company is considering establishing a pilot MAP network that would first be installed in one of Weyerhaeuser's research and development centers. "The pilot application could then be moved into an actual production facility," he predicted. If the effort to rally users to sponsor the Autofact demonstration is successful, the company may decide not to construct the MAP pilot net, Miklovic explained. "If we had access to the resources and data used to create the Autofact '87 exhibit, we may not establish an internal MAP pilot test," Miklovic said. "We could acquire the necessary knowledge by having our people work on the project."

The need to connect equipment produced by several different vendors to machinery in a process manufacturing line has been the driving force behind the corporation's interest in MAP. Miklovic said three plants that would qualify as candidates for MAP-compatible communications networks have been identified. The MAP project manager would not divulge the locations of the three plants.

Weyerhaeuser said the MAP network candidate facilities currently use equipment produced by several different vendors. "One facility's pulp mill may have been built years ago and was outfitted with equipment from one vendor. The plant's paper mill was built years later and was equipped with gear from a different vendor. The plants use IBM systems for order entry tasks, Hewlett-Packard [Co.] systems for preventative maintenance management functions and Wang [Laboratories, Inc.] systems to track inventory."

Unlike other manufacturers, Weyerhaeuser has not focused all its energies on intraplant networking projects. Miklovic said 200 Weyerhaeuser facilities are connected to a nationwide X.25 packet-switching network. This wide-area networking scheme may save the company countless hours of communications network planning because each of the company's plants is essentially autonomous, he noted.

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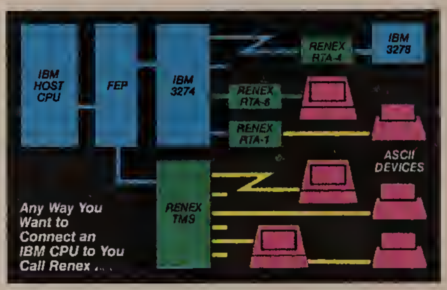

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OPENING NEW LINES OF COMMUNICATIONS

COMMUNICATIONS MANAGER

> “How does communications technology affect the stock market? It is changing the hours we trade and who we trade with. The concept of a 24-hour market has been talked about for years. It is now becoming a reality.
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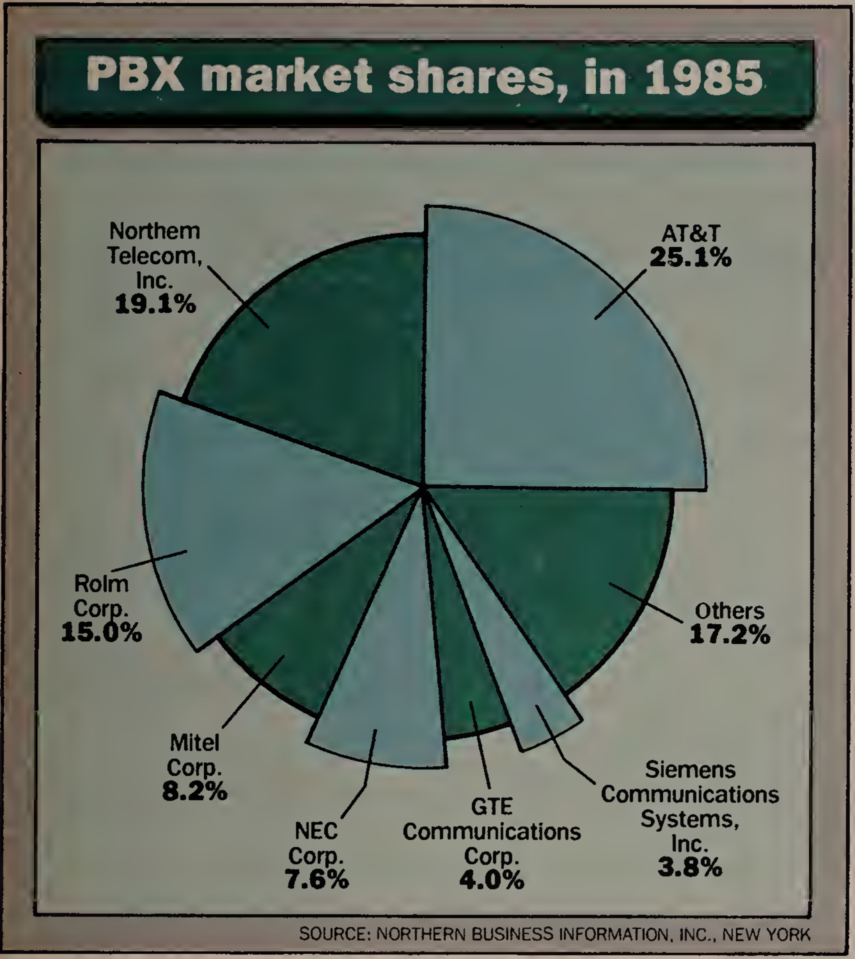
> data communications manager
> Midwest Stock Exchange



PBX market shares, in 1985

SOURCE: NORTHERN BUSINESS INFORMATION, INC., NEW YORK

GUIDELINES

MARGIE SEMILOF

Keep up or pay

Most communications managers say they lack the time and manpower to stay abreast of the numerous regulatory changes constantly pouring out of the Federal Communications Commission. Keeping the corporate network running and following product developments are certainly foremost considerations. However, FCC-generated tariff alterations can have a powerful effect on overall network costs.

When divestiture hit, most communications managers were reluctant to make changes in their network configurations. They preferred to wait until the ensuing battles between the carriers, the courts and the FCC calmed down. Those managers knew their current network setups were probably too expensive, but they were also unable to pinpoint just where changes should have been made. That wait-and-see attitude is slowly beginning to squeeze many a corporate communications budget.

Unfortunately, communications managers have no choice but to keep up with regulatory issues, especially if their networks use a lot of private lines mixing voice and data. According to David Garbin, deputy director of the telecommunications systems engineering division of Systems Research & Application Corp., the cost differential between various voice and data circuit offerings and such nontariffed services as virtual private networks can vary dramatically.

Users can read about tariff changes through the trade press or via analyst research services. But these sources don’t offer information on how those changes will affect their networks.

In six months, the user may find software-defined network service prices coming down and access charges going up. If he keeps a balance of services and private lines, he has a fair chance of adjusting the network to take advantage of changing prices.

▶ MANAGEMENT INNOVATIONS

RFPs go on-line

Automated bidding pares paperwork.

BY MARGIE SEMILOF
Senior Writer

SANTA ANA, Calif. — The telecommunications staff at American Edwards Laboratories, a health care products manufacturer located here, avoided wallowing in piles of paperwork by designing an automated request for proposal (RFP) system that will handle vendor bids for a proposed $1.5 million telephone system contract.

Douglas Armitage, manager of telecommunications services at American Edwards, used Lotus Development Corp.’s Lotus 1-2-3 spreadsheet package to build the automated RFP system. Vendors are provided with what amounts to a blank RFP on three diskettes and can use a personal computer to enter bid specifications into columns. The system will allow American Edwards to measure product capabilities using a point scoring system.

Armitage said the automated RFP system is expected to save his company and bidding vendors time and manpower by providing a uniform method of information input. He explained that the RFP involves a private branch exchange or Centrex system to be shared by three separate companies — American Edwards, American Bentley Laboratories, Inc. and American Technology and Venture. The three companies are divisions of Chicago-based Baxter Travenol/American Hospital Supply Co.

All three units currently lease telecommunications equipment separately. Rather than buy one system for American Edwards and have the latter two companies continue their expensive leasing program, Armitage proposed wrapping the communications needs of all three organizations into one RFP.

In addition to sharing a phone system, Armitage proposed that all three divisions, which are located just three miles apart, share the expertise of one in-house telecommunications technician and also share one central maintenance cost. Neither American Bentley nor American Technology Ventures now have a full-time telecommunications staff.

“By sharing one system, we can get more use out of the communications lines than before,” he said. “All three companies could take advantage of such services as AT&T’s Megawats, instead of paying for separate 800 numbers.”

The companies are looking for a communications system that will support approximately 1,500 users and transmit heavy data traffic. Armitage began preparing the RFP last January, taking a month to design the automated system on the Lotus disks.

The RFP is divided into three sections. Bidders receive a 40-page bound report, which contains an overview of the actual bidding process and a complete cabling map of all three locations. The report also includes feature requirements and time constraints of the project. Bidders were asked to complete questions on three separate disks in the package. Each of the disks details various aspects of the bidding for each of the three companies. The first spreadsheet is a list of 180 specific questions, which ask vendors to describe their system proposals.

The second spreadsheet requests a breakdown of system costs. For example, Armitage requested each vendor to price 50 inbound Wats lines. Each vendor plugs its response into a designated column. Other questions ask for details regarding total purchase amount, software cost, one-time installation cost, monthly maintenance and postcutover information.

A third spreadsheet asks the vendor to include various features and capabilities of its phone system. Armitage set up a method of point scoring to measure products against each other.

“If the vendor can supply direct inward calling, for example, the vendor is assigned 100 points,” Armitage explained. “When the completed disks come back to us, our system will automatically check columns for yes or no answers. We can total up the score and very quickly see which product has the highest point value.”

Armitage noted three basic priorities in choosing the company’s system. The first is its voice capability. The second consideration is the system’s ability to send data between personal computers or from a personal computer to a mainframe. Armitage also wants the PBX or Centrex network to interconnect the three companies’ mix of mainframes and minicomputers, so terminal users can access any processor at any location.

His third consideration is service and the vendor’s ability to keep the system running at all times. Armitage said doctors call American Edwards several times a day looking for specific medical products for an operation. “If our network goes down, we can literally endanger the life of a patient,” he added.

Vendors working on the American Edwards bid reported being generally pleased with the unique, automated approach, despite an expected rash of first-time bugs.

Larry Smith, account executive at Pacific Bell, and Dora Ewing, account executive at Northern Telecom, Inc., both noted that Armitage was the first user ever to offer them an automated RFP. The vendors had some initial problems getting used to the Lotus system, but they claim the project still saved time and manpower.

“We finished our response a week ahead of time,” Smith said. “We didn’t have to wait for clerical people to type in changes,” he added. “When it was time for our legal department to review the bid, we just printed out a copy and sent it off.”

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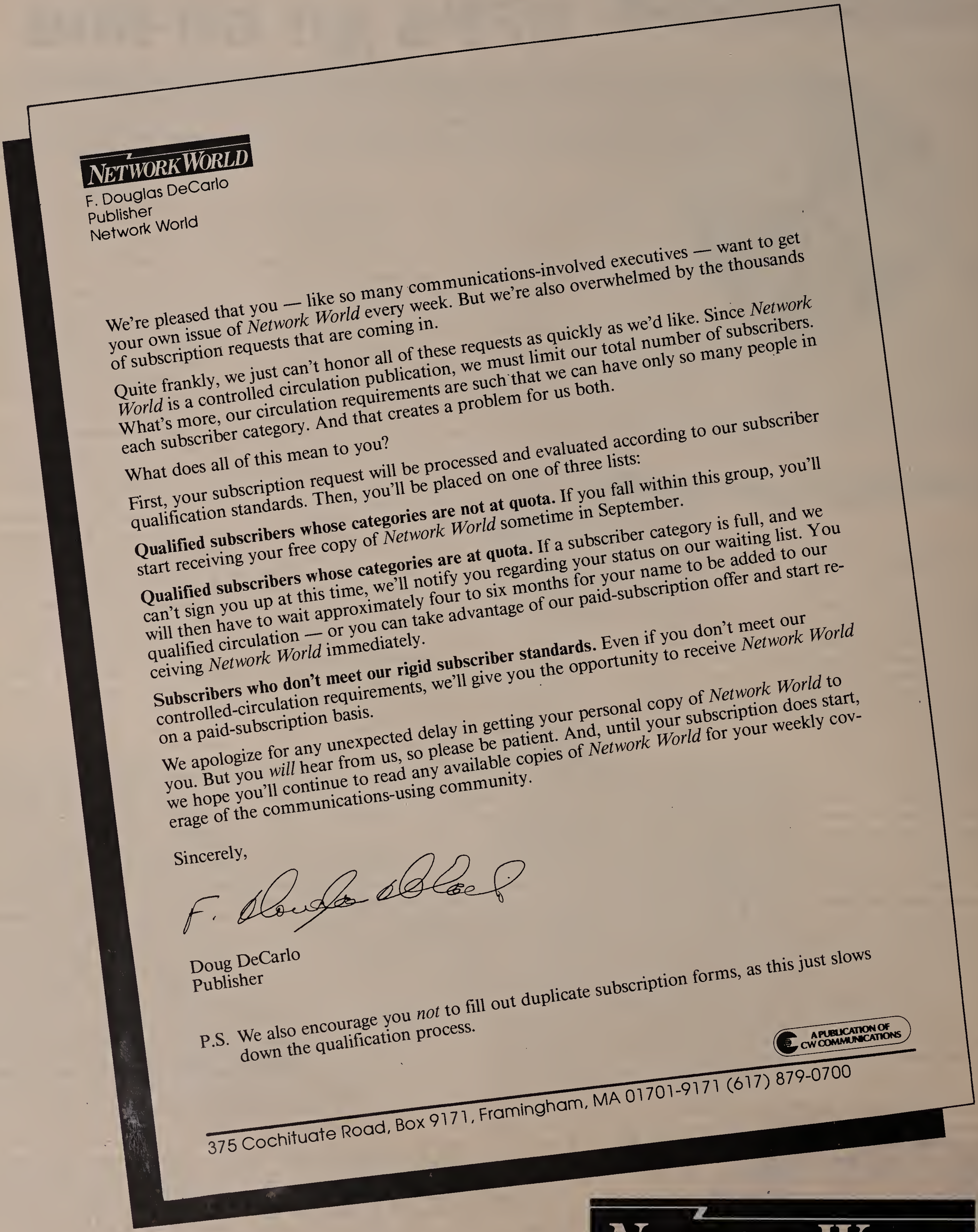

NETWORK WORLD

F. Douglas DeCarlo
Publisher
Network World

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Sincerely,

F. Douglas DeCarlo

Doug DeCarlo
Publisher

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A PUBLICATION OF CW COMMUNICATIONS

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NETWORK WORLD

NEW PRODUCTS AND SERVICES

See inside for:
- ▶Port-sharing controller
- ▶Smart Alec enhancement
- ▶Local network software

▶ CASE COMMUNICATIONS

Net control system bows

Firm's 5110 system offers diagnostic data for modem, multiplexer nets.

BY JIM BROWN
New Products Editor

COLUMBIA, Md. — An entry-level network management and test system for use in modem or multiplexer networks was unveiled recently by Case Communications, Inc. The Case 5110 Network Management System supports up to 30 leased telephone circuits in a modem network or up to three multiplexers.

The firm claims the system will work best with its own fully diagnostic Case 4000 series modems or with its DCX 840 or DCX 850 multiplexers. Case also offers a modem expansion unit, which extends the series 4000's diagnostic capabilities to modems from other manufacturers.

The 5110 network management system hardware consists of a Convergent Technologies, Inc. minicomputer system running under the Unix operating system, a 50M-byte hard disk drive, an Intecolor Corp. color display terminal and a printer.

The system is packaged with Unify Corp.'s Unify relational data base management system, which is used to store network diagnostic information.

Network performance parameters and network configurations are entered in the system from the Intecolor terminal using application software written by Case.

Network diagnostic information and phone line quality measurements are transmitted from a side channel on the series 4000 modem. The receiving modems at the central site pluck off diagnostic information from the data line and feed that information to the computer system over a separate line. In this configuration, there is one cable from each incoming line that runs from the modem to a front-end processor and another that runs to the network management system.

In multiplexer networks, a card is installed in the multiplexer at the central site that collects diagnostic information from all lines and establishes one high-speed link to the network management system and another to the data host.

The diagnostic information is matched against the parameters set in the data base before it is stored. If a parameter is exceeded, then an alarm condition is displayed in real-time on the system terminal.

The system can be configured to perform 13 different tests of telephone line quality, including phase jitter, signal-to-noise ratio and carrier loss. The system also can be programmed to detect any of a number of user-defined modem operation errors and modem front-panel interrupt message alarms.

An alarm will turn one of the parameters displayed on-screen to any of a number of varying colors to report the error condition and the severity of the problem. When an operator acknowledges the alarm, the host system reports the location of the circuit in trouble, the parameters set for that circuit, the parameters being exceeded and any historical information about that circuit.

System operators can also prepare a trouble ticket when alarm conditions are noted. The trouble ticket is an on-screen form detailing the problem and any measures taken to correct it. The host system enters on the form the parameters set for the circuit. The operator then finishes filling out the form by entering what has been done to solve the alarm condition. The trouble ticket can then be stored in the data base and merged with other information.

"The trouble ticket is just a way of writing notes on the system and having them correlated with the trouble reports the network manager generates," said Terry Prickett, Case's product director for analog products. The system will also generate historical, statistical planning and cost allocation accounting reports using information stored in the data base.

The system can automatically configure Series 4000 modems on the network. The Series 4000 modem operation is typically configured from its front panel. However, once placed on a 5110 Network Management System, the front panel is disabled so that modem configurations can be performed from the system host.

The Case 5110 Network Management System lists for $15,995. With additional hardware, the 5110 can be upgraded to handle 240 lines and both a modem and a multiplexer network. Upgrades also include a full-color graphic terminal and spreadsheet-type report generators.

▶ PACER SOFTWARE, INC.

Tool links Macintosh PCs and VAX superminis

LA JOLLA, Calif. — Pacer Software, Inc. introduced a package that connects Apple Computer, Inc.'s Macintosh personal computer to Digital Equipment Corp. VAX superminicomputers running the VMS or Ultrix operating systems.

According to Pacer Software, the Macintosh version of its PClink software supports Macintosh file storage on a VAX system and file transfer between the Macintosh and the VAX system in addition to performing terminal emulation.

Half of the PClink package runs on the VAX system and creates a virtual disk for Macintosh file storage. Each Macintosh personal computer connected to the VAX will support concurrent access to as many as four VAX resident virtual disks. The virtual disk appears on the Macintosh system as an attached disk drive unit.

The package also supports the copying of VAX files to Macintosh virtual disks on the VAX and copying of Macintosh files from the virtual disk to the VAX system. The company claims this function allows host applications to interact with Macintosh applications.

The package's Macintosh resident software links to VAX applications by emulating DEC's VT100 and VT200, Applied Digital Data Systems, Inc.'s Viewpoint 60 and Televideo Systems, Inc.'s 950 terminals.

The Macintosh-to-VAX link is made through either an RS-232 connection, a Hayes Microcomputer Products, Inc.-compatible modem or a Corvus Systems, Inc. Omninet local net.

Pacer Software claims the package will provide a bridge to its earlier PClink package for the IBM Personal Computer. Because both the Macintosh and the IBM Personal Computer PClink packages connect to the VAX, the company says the VAX can be used as a bridge for transferring files between Personal Computers and Macintoshes.

The package also includes a command file feature, which lets users customize their own communications procedures.

Some of the functions users can configure into their communications procedures include a modem autodialer, an autologon sequence and an unattended operation for file transfer.

The PClink for Macintosh is currently available for a license fee of $2,000 per VAX system.

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Port-sharing controller

Reliable Communications, Inc. introduced a new port-sharing unit designed to control communications between two data terminals.

The **Model 282** is said to function in much the same way as a remote-controlled A/B switch, shifting the transmit data and receive data pins of data terminal ports. The device supports synchronous and asynchronous environments.

The Model 282 is code- and speed-transparent and features fully buffered pins that conform to both RS-232 and CCITT V.24 specifications. It can be used to share a modem in a polled communications system, print-queuing and sharing system, in addition to serving as a computer port-sharing device.

The Model 282 sells for $245.

Reliable Communications, Inc., 10280 Imperial Ave., Cupertino, Calif. 95014 (408) 996-0230.

Smart Alec enhancement

Digital Communications Associates, Inc. recently enhanced the terminal emulation capabilities included with Smart Alec, its link between IBM Personal Computers and IBM System/34, System/36 or System/38 minicomputers.

The new **Smart Alec emulation software** is fully compatible with IBM's Application Program Interface, which enables users to run a wide range of IBM software programs such as PC Support 36. The software also supports IBM's enhanced Graphics Adapter. Smart Alec includes file transfer capabilities.

The enhanced version of the emulation software supports up to seven host sessions simultaneously. Previously, Smart Alec allowed for three simultaneous sessions.

The previous release of Smart Alec included host-based file transfer software for the IBM System/34 and System/36. The new release also makes the basic and the enhanced file transfer software available for both the IBM System/38 and the IBM Desktop/36.

Smart Alec now offers the user three selectable keyboard profiles, including an IBM 5250 or 5290 keyboard, a Personal Computer keyboard or a combination of both types.

Smart Alec emulates IBM 5251 Model 11, IBM 5291 or IBM 5292 Model 1 terminals, thereby providing for direct attachment to an IBM System/34, System/36 or System/38. Remote attachment to an IBM 5294 workstation controller or an IBM 5251 Model 12 is possible via a pair of modems.

▶ VOICE MESSAGING

Octel, NEC tie systems together

MILPITAS, Calif. — Octel Communications Corp. completed an integration project that will make its Aspen voice messaging system fully compatible with the NEAX-2400 Information Management System Multiple Module Group, a private branch exchange manufactured by the Business Systems Sales Division of NEC America, Inc.

Octel lost its interface to Rolm Corp.'s CBX line of PBXs when Rolm announced it would no longer manufacture its ETS telephone sets and interface cards ("ETS demise hits Rolm, Octel users," *Network World*, Aug. 4). Octel used these devices to connect with Rolm PBXs.

Octel said NEC helped develop an interface that uses NEC's Message Center Interface protocol. Once installed on the NEAX2400, the Aspen system will support a recorded personal greeting to callers and enable a caller to leave a recorded message without dialing additional digits or requiring intervention by a third party.

The message-waiting indicator on the called party's telephone will be illuminated when messages for that person have been recorded.

Octel said its Aspen, Aspen Branch and Aspen Maxum voice message systems have all been integrated to the 5,520-port NEAX2400, which runs the Message Center Interface software.

Aspen Branch has a range of 50 to 400 subscriber lines and costs $25,000 to $55,000; Aspen supports 100 to several thousand subscriber lines and ranges from $55,000 to $225,000; and Aspen Maxum can support up to 7,500 subscribers and is priced at $155,000 to $615,000.

In addition to NEC's NEAX2400, all Aspen systems have been integrated with PBXs from Siemens Communications Systems, Inc., Northern Telecom, Inc., Mitel, Inc., Hitachi, Ltd. and InteCom, Inc.

The price of the latest release of Smart Alec is $895. Users of earlier versions can upgrade at no extra charge.

Digital Communications Associates, Inc., 1000 Alderman Drive, Alpharetta, Ga. 30201 (404) 442-4000.

Local network software

Elgar Corp. has introduced a software program designed to link local-area networks with the company's standby battery power systems.

The **Failsafe LAN** is compatible with most popular operating systems and protects individual computers and local-area net systems from damage or loss of data during utility power failures.

During power failures, Failsafe LAN displays a prompt on its monitor indicating that it has been activated. The device also displays the amount of time remaining before programmed shutdown occurs and the system is secured.

Failsafe LAN automatically secures the system by executing shutdown procedures before utility power failures exceed the capability of the battery back-up power system. It closes the application programs, secures system files, initializes printers and executes external processes.

Failsafe LAN allows the operator the option of programming a manual or automatic unattended restart upon restoration of utility power. The operator can also display and print a status log file that lists when Failsafe LAN was activated, when the system was secured and when power was restored.

Failsafe LAN is bundled with Elgar's battery back-up system and offers a phase-lock looping circuit that optimizes retransfer from the inverter to the utility line using a make-before-break power scheme.

Failsafe LAN costs $199. When included with the battery backup system, costs range from $650 to $1,200.

Elgar Corp., 9250 Brown Deer Road, San Diego, Calif. 92121 (619) 458-0291.

Two Racal-Vadic modems

Racal-Vadic, Inc. announced two new modems, a 4.8K bit/sec synchronous model that features multiprotocol autodial capability and a 1,200 bit/sec model.

The **4850PA** 4.8K bit/sec modem supports 801-type parallel automatic calling and 3270 Synchronous Data Link Control, High Level Data Link Control and 3780 Binary Synchronous Communications serial dialing protocols.

The 4850PA provides Bell 208 and CCITT V.27 compatibility. It features full front-panel control and can be operated at 9.6K bit/sec.

The device features an alphanumeric display and keyboard front panel to allow for local reconfiguration, diagnostic option configuration, number storage and remote testing.

The 4850PA costs $1,295.

The new 1,200 bit/sec asynchronous modem, the **1200VP**, is compatible with Hayes Microcomputer Products, Inc.'s command set and can operate at 2,400 bit/sec. The device includes a command that prints out S-register values and a true redialing command.

Eight front-panel displays indicate the device's operational status, and four front-panel switches allow users to choose between data or voice mode, high or low speeds and manual or automatic answer.

A voice/data switching circuit senses when a telephone connected to the modem is cradled or uncradled, allowing the device to switch automatically between data and voice mode.

The 1200VP costs $350.

Racal-Vadic, Inc., 1525 McCarthy Blvd., Milpitas, Calif. 95035 (408) 946-2227.

Communications line test unit

Communication Devices, Inc. introduced a device for testing modems, telephone lines and computer ports.

The **Diner** can support up to 300 preprogrammed 15-digit telephone numbers and four layers of dialogue information to access remote computer ports. The Diner places calls to phone numbers in its memory in an effort to connect to a modem and remote computer port. Error reports are sent to a local printer indicating whether the modem is ringing with no answer, is continuously busy, has not connected or has failed a loop-back test. The Diner also tests telephone lines and sends user program information to test the response of remote computer ports.

The Diner unit is priced at $1,100.

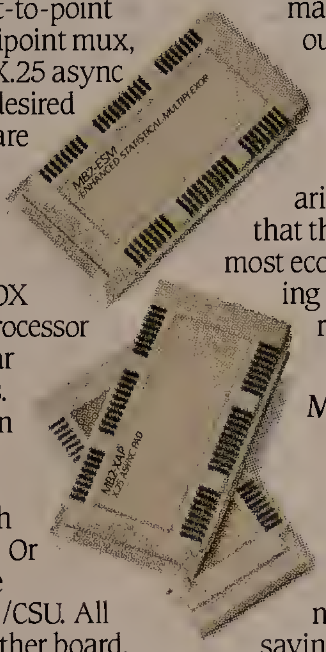
Communication Devices, Inc., 1 Forstmann Court, Botany Village, Clifton, N.J. 07011 (201) 772-6997.

Here's the box.

A quick look at the MICOM™ BOX will tell you this is no ordinary data concentrator. In fact, the MICOM BOX Type 2 is the most flexible to configure and easiest to install data concentrator on the market.

It couldn't be easier to respond to new applications or to tariff changes. With six FEATUREPAK cartridges to choose from you can make the MICOM BOX function as a point-to-point async stat mux, a multipoint mux, or even a multiplexing X.25 async PAD. Simply select the desired FEATUREPAK™ firmware cartridge and plug it in.

EXPANSION'S A SNAP.



Inside the MICOM BOX you'll discover a microprocessor "engine" plus a modular system of circuit boards. And in minutes, you can expand the number of channels from 4, to 10, to 16. Add modems with automatic dial back-up. Or switch to digital service with an integrated DSU/CSU. All by just snapping in another board.

The user, not the factory, determines system parameters—such as flow control, data rate, and special host support. So you get greater flexibility, performance, and ease of installation.

THERE'S SOMETHING IN IT FOR EVERYONE.

It's inexpensive to expand the number of channels or add modems. Field service calls won't slow you down. Non-technical personnel can install MICOM BOX upgrades using nothing more sophisticated than a screwdriver.

Network managers can configure, monitor, and test the entire network from any async terminal anywhere on the system using our unique Command Facility software. In fact, our menus are so clear-cut that even first-time users can do it.

Finally, corporate executives, using simple arithmetic, can quickly prove that the MICOM BOX is the single most economical solution to increasing network performance and reducing telephone line costs.

THE MICOM BOX MAKES OBSOLESCENCE OBSOLETE.

The MICOM BOX Architecture is all you'll need to graduate from small, point-to-point, leased-line networks to a variety of cost-saving multipoint configurations.

Our integral modems are soft—controlled by the multiplexor itself. Auto dial back-up for failed leased lines is transparent. And data rates of up to 9600 bps are available.

And because it's fully compatible with your presently-installed MICOM Micro800 concentrators and X.25 access equipment, your financial investment is protected, too.

Quite simply, the MICOM BOX provides the low cost, open-ended answer to accommodating new applications and emerging networking standards. So there's never a risk of obsolescence.

CONCENTRATE. IT'S CHEAPER.

Data concentration is fundamental to your networking success. But now the rules are changing.

You must deal with deregulated and continually changing tariffs. A growing number of transmission technologies. The demands of desktop computers and distributed databases. And adapting to the various protocols of major vendors like DEC, DG, Prime, Tandem and HP.

That's why we developed the MICOM BOX. To bring together everything we've learned about making data communications less costly, easier to manage, and more adaptable to change. We've simplified every aspect of installation, daily usage, network expansion and troubleshooting.

As a result, one MICOM BOX and a handful of our FEATUREPAK cartridges are all you need to tackle a range of applications that would have previously required as many as 55 separate models. It's a system that changes as your company's needs change. Efficiently and economically.

That's what you'd expect from MICOM, the world leader in low-cost, multifunction stat muxes. Our experience makes us the only real choice for datacomm professionals who demand the best products and support.

The MICOM BOX. How did we ever pack so much into it? To find out, just call us at 1-800-MICOM-U.S. for a free 16-page brochure that details the reasons why the MICOM BOX is the data concentration solution you've been looking for.

MICOM®

MICOM Systems, Inc., 4100 Los Angeles Avenue, P. O. BOX 8100, Simi Valley, CA 93062-8100. 1-800-MICOM-U.S.
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And tomorrow's potential.

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PLANNING

STEPHEN ZAMIEROWSKI

Communications blueprint whittles away costs

Equitable Bank NA drew up a blueprint for a telecommunications system in January 1985.

Since then, it has saved nearly $350,000 in communications expenses.

The results of the long-range plan adopted by Equitable, a regional bank in the Baltimore area, is a dramatic example of positive payback through planning. It demonstrates what a commitment to cutting costs and optimizing services can bring.

Equitable's plan is a 24-page document outlining the company's communications goals through 1987. It is anchored by six major objectives:

- To optimize control of the corporation's information system.
- To manage the cost of communications expenditure.
- To establish a corporate architecture for business office electronic systems.
- To research, develop and pilot customer-oriented and cost-effective information systems.
- To research actively and advise on current communications developments.
- To train users in the effective use of the corporation's communications assets.

> *"The long-range plan is a dramatic example of positive payback through planning."*

Anthony Tabasco heads the communications staff responsible for carrying out these objectives.

By controlling costs and maintaining a strong corporate network, Equitable is attempting to supply better cost-effective financial services to its clients.

These six objectives are implemented through what the bank calls action plans. Three of the action plans — targeting local service, data communications costs and emerging technologies — have already made a significant impact on the cost and quality of communications services.

The bank runs an operations center, which is the hub of its network, and a corporate headquarters, as well as 130 branch offices, which are all in Maryland. As with many businesses and especially with regional banks, the cost of local voice service takes up the largest share of Equitable's communications budget.

In an attempt to control costs in the local loop, Tabasco and his staff initiated an action plan to take a careful look at the type of service they were purchasing from their local Bell operating company. They had heard of other businesses that had cut costs by changing from a flat-rate geographic service to a measured message-unit service.

After visiting the branch offices and timing calls, they determined that most local calls were fewer than three minutes long. Under the flat-rate service, Equitable was paying 10 cents for three-minute calls. They calculated that the cost for a three-minute call under a measured service would average seven cents, a difference of 30%. Making the switch to measured service saved the bank about $70,000 in 1985, according to Tabasco.

Another of Equitable's action plans involved doing a complete audit of all data communications costs from 1979 through 1984. Leased-line routes and tariffs had changed often during AT&T divestiture, and the bank wanted to determine if any billing errors had been made during that time.

The audit turned up almost $175,000 worth of billing errors. The bank received refunds from both the local and long-distance carriers.

As one of its objectives, Equitable's communications staff focuses on emerging technologies, looking for new products and services that can best be used to control costs and optimize the network.

An action plan that began as an investigation of T-1 as an alternative led to the replacement of leased lines between the operations center and the corporate headquarters with two T-1 circuits. The T-1 lines replaced 48 voice lines, nine analog data lines and one 56K bit/sec digital data line. According to Tabasco, the T-1 lines have resulted in a savings of $30,000. The new circuits also offer improved quality and speed of data communications and carry 30% to 40% excess capacity that can be used when needed, at a fairly low incremental cost.

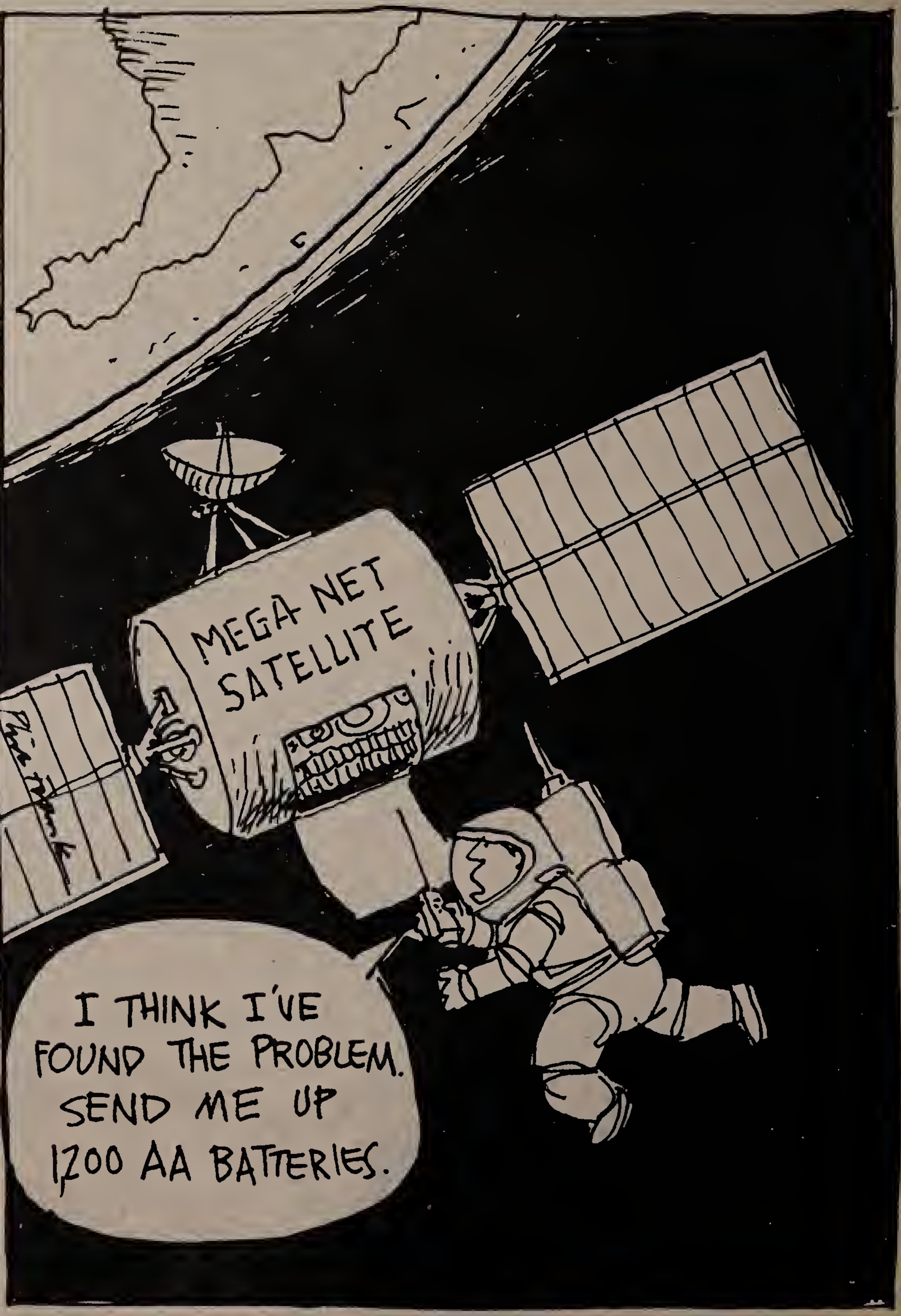
> *"Expenses were $350,000 less."*

Switching to measured local service, performing an internal audit of data communications expenses and installing T-1 lines are only three of the many action plans that have been and will be implemented by Tabasco and his staff.

By following the long-range plan, in the first year Equitable's communications expenses were $350,000 under budget. Not only did they spend less than the budgeted $2.5 million for 1985, but they also spent less than they did in 1984. Equitable's success in significantly reducing its communications costs, while improving its ability to manage its communications facilities, is a perfect example of the importance of long-range planning.

Zamierowski is client account manager for the communications technology service program at International Data Corp.

▶TELETOONS — By Phil Frank


MEGA NET SATELLITE
I THINK I'VE FOUND THE PROBLEM. SEND ME UP 1,200 AA BATTERIES.

THE ISSUE:

Should the FCC take the telecom policy reins from the courts?

PRO:

BY ARTHUR C. LATNO JR.
Special to Network World

The U.S. needs a revised, more coherent national telecommunications policy that deals with the realities users face today. Right now, telecommunications policy in this country is in a state of confusion, replete with overlapping responsibilities and philosophical disagreements among the commissions and courts that it must answer to.

Local telecommunications companies such as Pacific Bell and Nevada Bell are unnecessarily and illogically limited in the network services they can provide to their customers. Regional Bell operating companies such as Pacific Telesis Group and its subsidiaries must go to the Department of Justice and the federal courts for permission to expand into all but a few businesses. This process discloses RBOC business plans and alerts potential competitors. No other U.S. industry faces such a gauntlet of approval to conduct its business.

The pertinent question is: Who benefits from the current system? Not the ratepayer, who is arbitrarily denied access to many services that the public switched network could provide. Not the RBOC shareholders, because RBOC assets cannot always be used to generate the maximum return on their investment. And certainly not the U.S. economy, which is losing both revenue and jobs as large business users and others turn to expensive, often foreign-manufactured customer premises equipment to obtain communications capabilities that could be provided more easily and economically by the RBOCs.

Congress should reassert its authority to refine the AT&T Consent Decree and place responsibility for administering it in the appropriate regulatory agencies.

At the federal level, the appropriate agency is the Federal Communications Commission. The decree has become a barrier to competition, and more important, to the provision of new services.

Two key issues constitute the argument for a simpler, more coherent national telecommunications policy. First, existing state and federal regulatory agencies should have the authority to ensure that the goals of the decree are attained. To prevent duplication of responsibilities between agencies and conflicts with the courts, the bill of Sen. Robert Dole (R-Kan.) or other proposed BOC control bills should state that these agencies, under congressional guidance, are responsible for telecommunications policy.

In short, Congress is in a better position than the courts to set national telecommunications policy goals. These goals could include universal service, reasonable rates and the timely availability of new services and technologies.

Second, the decree has become a major barrier to competition in the telecommunications industry and to new services for consumers. Removal of the information services restriction would greatly expand the number of telecommunications products and services.

Providing such services through the public switched network would make them accessible to more customers at a more reasonable cost.

It is faster and more efficient to make information services available to customers via the switched public network than to require them to buy sophisticated customer premises equipment for their homes or offices. The key here is choice.

Customers should have the widest possible array of choices to obtain access to information services; they should not be arbitrarily limited to obtaining them via customer premises equipment vendors. Otherwise, many users will not be able to use or afford them.

More important, the revenue derived from these services can be used to assure a key goal of telecommunications policy. That goal is to keep universal telephone service accessible and affordable to all consumers.

Not only would removal of the information-services restriction of the decree reduce upward pressure on local rates, but it would also help keep large business users on the network.

Currently, these users have an incentive to bypass the public switched network to obtain information services.

Another component of the decree needs revision as well. Re-

See **Pro** page 34

Latno is executive vice-president of Pacific Telesis Group.

CON:

BY JACK MCDONALD
Special to Network World

Should the Federal Communications Commission take the reins of telecommunications policy from U.S. District Court Judge Harold Greene and the Department of Justice? At first glance, this is an excellent proposal, which should both simplify and improve the construction and implementation of U.S. telecommunications policy. However, when one learns of the source and history of the proposal, this innocent flower turns out to have a serpent underneath.

This proposal emanates from the regional Bell operating companies. Sen. Robert Dole's (R.-Kan.) bill, S. 2565, also known as the Federal Telecommunications Act of 1986, is nothing more than an attempt to overturn, without due process, the restrictions that the Modified Final Judgment imposed on the Bell operating companies.

Since the January 1984 divestiture of AT&T, the BOCs have demonstrated an anxious desire to enter the three lines of business from which the Modified Final Judgment specifically excluded them — the provision of information services, long-distance service and telecommunications equipment manufacturing.

Prior to the introduction of the Dole bill, Judge Greene and the Justice Department, who administer these restrictions, gave no indication that they were of a mind to lift these prohibitions prior to the completion of the three-year review now under way at the Justice Department.

Reacting to this strong position, the BOCs turned their attention away from the court system to Congress, where, thanks to an effective lobbying campaign, they succeeded in introducing a number of proposals in the House of Representatives that would, if passed, lift the restrictions. In March of this year, FCC Chairman Mark Fowler declared in congressional testimony that he was in favor of legislation to lift the Modified Final Judgment restrictions from the BOCs.

A little more than three months later, the BOCs persuaded Dole, the Senate majority leader, to introduce legislation that would transfer authority over the Modified Final Judgment from the more restrictive Judge Greene to Fowler's permissive FCC. The crowning achievement of the BOCs' lobbying campaign was to convince Sen. Dole that this was a regulatory improvement rather than self-serving subterfuge.

The argument no longer turns on whether or not this is a simple transfer of jurisdiction over the Modified Final Judgment. It is really an argument over why the restrictions were imposed in the first place and whether or not they should be lifted.

The restriction on manufacturing should not be lifted. Spokesmen for the interexchange carriers and information services are equally convinced that the restrictions should be left in place.

The BOCs are the monopolistic providers of local exchange service within their franchised areas. In such a powerful position, they have numerous ways in which to disadvantage manufacturers of competing products.

For instance, they could discriminate against manufacturers of customer premises equipment by exploiting an advanced knowledge of changes in the local exchange network or by configuring network interface specifications. The types of interconnection, testing procedures and maintenance of competing customer premises equipment could also be discriminatory.

Furthermore, the BOCs could cross-subsidize the development of specific products by configuring their activities in ways that would permit costs associated with equipment development to be assigned to rate-based, regulated activities. This is a form of capitalization that is not available to competitors of the BOCs and is extremely anticompetitive.

If the BOCs become vertically integrated companies like the old AT&T, then, like the old AT&T, they will have the ability, the opportunity and the incentive to engage in cross-subsidization. They will maximize their return by favoring their house brand over other manufacturers' equipment, and users will not obtain the best quality equipment at the lowest price.

See **Con** page 34

McDonnell is group vice-president for the Information and Telecommunications Technologies Group at the Electronic Industries Association in Washington, D.C.

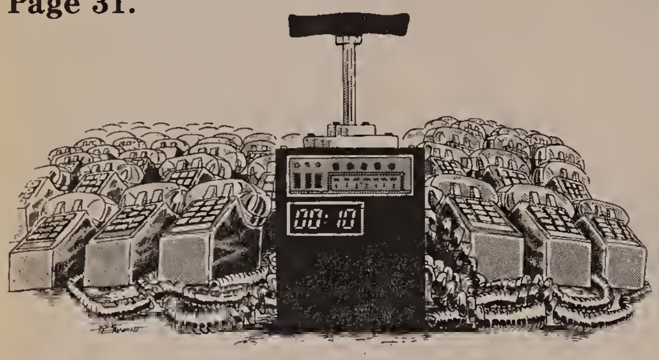
NETWORK WORLD

Features

August 11, 1986

Talking telecom to top brass
If communications managers want to talk turkey to top executives, they've got to be able to cast technical issues in management terms. The key to success is knowing the company's business and learning the language of top management.
Page one.

Corporate growth: a telecom time bomb
Sudden company growth requires you to move into a second building across the street. You need to set up data connections to headquarters' mainframes and voice connections to the headquarters' private branch exchange. And it's got to be operational in 60 days. No problem, right?
Page 31.



Data to go
Users are pushing for portability, and vendors are responding with hand-held merchandise. The only thing larger than the number of portable terminals on the market is the number of applications users can develop with the technology. The hand-held computer is making a name as an integral strategic communications tool.
Page 33.

FEATURE FOCUS

Talking telecom to top brass

It takes managerial manners to make telecommunications issues a best-seller with corporate executives.

Continued from page 1

"The skill that's most necessary in telecommunications is communication," says Jeff Hafer, telecommunications manager at GPU Service Corp. "We [telecommunications managers] need to divorce ourselves from the technical side. We need to address the economic issues, since economics drives all upper management," adds Hafer, whose Reading, Pa., company handles telecommunications for a group of electric utilities.

Rapid changes in the industry are the main force behind the need for strong management skills. While many telecommunications managers have stepped up to this new role, others are struggling to make the transition. In addition, upper management may not always be helping the situation. Too often, the top brass' desire to retain technically competent staff members has led them to promote techies to management positions, says Nancy Hamm, manager of voice procurement and installation at the Wells Fargo Bank in San Francisco.

TOM BARRETT

Lacking people skills, these techies often make lousy managers, and in many cases, the individual who is promoted really wants to do design work. As a result, upper management's strategy for retaining people can backfire, says Ken Coleman, manager of telecommunications consulting at Deloitte Haskins & Sells in Los Angeles. According to Coleman, many telecommunications professionals quit because they don't want the management responsibility.

"In some cases, people don't want to step up to it," he says. If the telecommunications manager is a good quarterback, but not a good coach, upper management might need to bring in a vice-president of telecommunications, says Coleman, who was once a telecommunications manager himself.

According to managers and consultants, one of the keys to success in telecommunications management today — aside from basic management skills — is an understanding of the business of the telecommunications manager's company.

"Most telecommunications managers see themselves as providers of technology, as opposed to providers of a resource for the corporation," Coleman maintains. He stresses that those managers need to remember their role. "The reason they were hired was to help a company stay or become profitable," he says. "The telecom manager needs to be the liaison between where the company is going and what the technology can do."

According to Hamm, this business orientation puts distinct demands on the manager. "That

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translation of business needs to technical requirements is pretty hard to do," she says. "You have to know the business. That's part of the quantum leap to management.

"You're getting away from the nitty-gritty of technology and into the business side and salesmanship," she says. "A lot of it is making that translation — rather than talking T-1, talk dollars and ease of use. If you're talking bottom line, [upper management] will usually buy [your proposal]."

Vincent DeGenarro, managing director of corporate communications at American Can Co., agrees that a good manager must be able to relate to upper management and be able to talk about the industry with authority.

"There's always a challenge in making people understand what's going on," DeGenarro says. For example, he says,"you can't talk in terms of PBXs, you have to talk in terms of telephone systems.

"Learn what business you're in," he adds. "Someone in manufacturing might not [automatically] be good in financial services. You've got to learn by doing."

DeGenarro puts his learn-by-doing philosophy to work with his staff of 22. Staff members must follow a specific procedure to gain approval for a project. First, they must develop a business case with the business rationale, risks, costs and envisioned benefits fully detailed. Then the group or individual responsible for the project must present the proposal internally to the department.

Only after this internal review, which doubles as a dry run, are proposals presented to upper management.

Updating top brass

The industry isn't the only changing factor in telecommunications today; upper management's expectations are also changing. Top brass is showing greater interest in both data communications and telecommunications, DeGenarro says.

Indeed, many of today's business magazines aimed at top executives feature stories on how companies can use technology to gain a competitive advantage. Telecommunications managers should read these publications to be informed about what information top brass is getting, Coleman says.

"Five years ago, you didn't read about telecommunications in *Fortune*, *Forbes* or *Newsweek*, he says. "Now the telecommunications manager is facing an executive who's informed, but not necessarily educated."

Understanding what drives executives and what the level of information is that top brass needs is crucial in building a good working relationship, Coleman says. He adds that one way for managers to understand upper management better is to hone their listening skills.

"I don't think we listen to the business needs, or learn about the business we're in," he says. "A lot of it can be learned on the job. Take off the technology hat once in a while."

Holding regular status meetings is an important way to keep the lines of communication open with upper management. Make time for frequent, short meetings, rather than holding infrequent meetings that run longer than an hour, Coleman advises.

He also cautions communications managers against calling a meeting when in panic mode or around budget time, and he recommends that they find ways to get on the calendar for meetings of the board of directors.

At American Can, DeGenarro keeps top executives up to speed by holding annual or semiannual meetings with them.

> *"It is crucial to know what drives executives and what information they need."*

During the meetings, projects for the coming year are laid out, and changes in the telecommunications industry are discussed. DeGenarro's group also holds an annual conference with middle-level managers to review similar information.

Hafer has also learned the value of regular status meetings. "We have an open dialog at all times," Hafer says.

"It's good visibility, and if somebody comes in my door with a new project, I don't have to educate upper management on what we're doing.

"You do it in short pieces, so they know where you are at all times," he continues. "So when you need them, you only ask for 20 minutes, not three days [of their time]."

Learning management skills

Hafer, who came up from the engineering side of the house, admits that he had to learn a number of new skills after moving into management.

"I had to make somewhat of an effort to adjust my working habits away from engineering and toward management," he says. "The fact that I recognized early on that I had to develop managerial skills helped. You definitely need to get some kind of training.

"You need to develop interpersonal skills, and writing and presentation skills have to be developed, since you usually don't have them as an engineer."

In some cases, he says "you need to become a salesman to management to show them why you need those skills."

A sympathetic vice-president, who rose to upper management from the data processing ranks, helped Hafer improve his skills. The vice-president regularly helped him trim technical jargon and acronyms from his reports and presentations.

Hafer and Hamm have taken advantage of training courses offered by their companies. Both advise colleagues to seek additional training outside the company when in-house programs don't fit their needs. Hafer, for example, went outside his corporate circle to take a class on how to run a meeting.

Several individuals on Hamm's staff are enrolled in an MBA course focused on telecommunications. Although these staffers are only part of the way through the program, Hamm has already seen a change in their approach to their jobs.

In addition, Hamm and her group have acquired support tools in the last year, including a pool of Apple Computer, Inc.'s Macintoshes. Between the Macintoshes and several IBM Personal Computers, the group can generate more professional presentations, graphics and reports. They are also using project management software to track their work better.

Naturally, all the management and presentation skills in the world won't help if you don't have sound ideas, says Henry Dortmans, director of consulting services at Angus TeleManagement Group in Toronto. "If you have a good idea, it should sell itself." Lay out the benefits and costs, he says, and point out what makes this technology or project different.

"[The challenge] is not in selling the idea, it's in doing the work to make sure you have a good idea," he adds. "It's looking at all the options and making sure you have something that makes sense. Most people aren't looking at all the options."

DeGenarro agrees that too many telecommunications managers are using the vast array of product and service choices as an excuse to examine only a few options.

> *"All the management skills in the world won't help if you don't have sound ideas."*

As a result, consultants are often brought in to help sort out the options — and they are more frequently hired by top management than by telecommunications managers.

Coleman says his company, Deloitte Haskins & Sells, is asked questions by executive management such as, "Do we need to upgrade this thing?"

Dortmans says requests from upper management account for approximately 70% of Angus TeleManagement's consulting jobs.

Understandably, telecommunications managers often say they feel threatened when top management brings in a consultant.

However, it doesn't have to be that way. Hafer at GPU Service Corp. says his management is upfront with him when they want to hire a consultant. "My management is very fair to me, in that they do try to explain the whys to me," he says.

Part of being a telecommunications manager is recognizing your staff's strengths and weaknesses and knowing when to ask upper management for outside help.

Hafer says he often requests a consultant himself, especially if he needs a person with specific expertise. He also asks to use a consultant's services when he has large, short-term projects that don't justify hiring additional staff.

Hafer says hiring a consultant also brings a less biased opinion to the company. "I try to be as objective as possible," he says, "but I still have something to gain or lose."

Both Coleman and Dortmans are sensitive to telecommunications managers' fears when upper management brings them in as consultants. However, Coleman says these fears are usually unfounded.

"[Upper management] doesn't need us to fire somebody," he says. Telecommunications managers should recognize that the top brass is actually showing their willingness to spend money to solve a problem by hiring a consultant.

"Our concern is that the business is going to be successful," Coleman says. "Often, all we do is listen to the executive and interpret that for the telecommunications manager. The consultant's job is to end with a win-win situation."

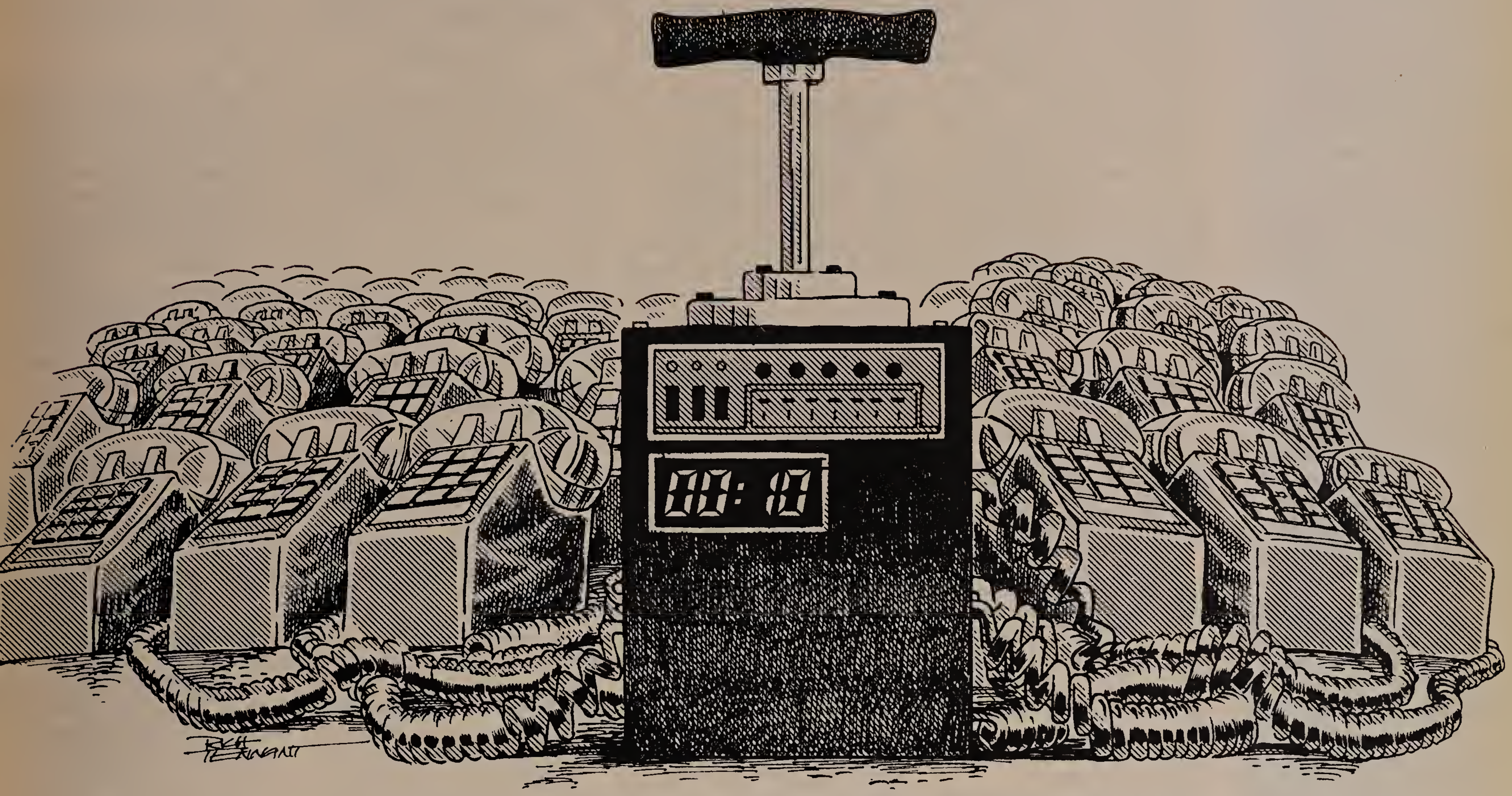
Always involve the manager

Part of achieving such a result is to involve the manager in all phases of a project. Dortmans prefers to present recommendations jointly with the telecommunications manager, rather than making the presentation by himself.

Both consultants agree that the top executives' preoccupation with quarterly results may not jibe with the telecommunications manager's fixation on building a system that will last five years.

This lack of corporate vision makes planning for telecommunications more difficult, Dortmans admits. However, he and Coleman warn that telecommunications managers shouldn't try to gain legitimacy in their organizations through technology. Although this path may have helped DP managers earn high-level titles, large staffs and big budgets, a focus on technological expertise has too often blunted the DP manager's understanding of his company's day-to-day business.

If the telecommunications manager has done his homework, learned his company's business well and polished his communications skills, applying this management expertise in a strategic fashion will help him make his mark.



Corporate growth: a telecom time bomb

An infrared link diffuses one user's communications explosion.

BY JIM EVANS
Special to Network World

Rapid corporate growth and attendant expansion of staff and facilities can turn into a telecommunications time bomb for a communications manager. That time bomb began ticking last year at Digital Communications Associates, Inc. (DCA), a manufacturer of network and personal computer communications equipment.

In November 1985, DCA was faced with a need to link a second building to its telecommunications and data processing facilities on short notice. Due to overcrowding, DCA's 40-person accounting department was forced to move into a building across the street from the company's Alpharetta, Ga., headquarters. In addition to requiring voice communications, accounting department personnel needed access to host computers located in DCA's computer center in the headquarters building.

The communications problem was further complicated by time limitations. DCA's information systems department had just 60 days in which to select, install and make operational a cost-effective system to connect the two buildings. With this restriction in mind, DCA began looking for a solution that would provide voice and data communications between the two buildings.

Evans is director of corporate systems at Digital Communications Associates, Inc. in Norcross, Ga.

Connecting choices

The first option DCA looked at was the most obvious. The company contacted the local Bell operating company, Southern Bell Telephone and Telegraph Co., and inquired about the cost of running 16 voice-grade leased lines between the two buildings. These lines would have cost DCA approximately $1,600 per month, or $19,200 per year — a high price to pay for communications between two buildings approximately 500 yards apart. In

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addition, due to constant road and building construction in the area, the reliability of the leased lines was in doubt. The high cost and low reliability of this solution forced DCA to investigate alternatives.

Since DCA manufactures Netlink, a time-division multiplexer capable of transmitting voice, data or compressed video at T-1 speeds, the company decided to try to find a solution that would include this product and thereby allow voice and data communications between the two buildings to be integrated over an aggregate link.

DCA inquired at Southern Bell again, this time about installing a T-1 circuit. This solution was ruled out because the lead time necessary to install the circuit was nine months. Upon discovering the long lead time involved, DCA did not even investigate the price of the circuit.

DCA also considered the possibility of installing private cable between the two buildings. However, this approach required that the cable run underneath two parking lots and a public street. City law would have required that DCA put up a $1-million bond to dig up the street. In addition, the process of getting bonding and contracting to install the cable would take at least six months. The high costs involved, combined with DCA's time limitations, made this alternative unacceptable.

At this point, DCA contacted T1 Transmission Systems, Inc., a local communications equipment supplier and consulting firm, to discuss the possibility of using super-high-frequency 23-GHz digital microwave radio to link the two buildings.

T1 Transmission Systems, which has extensive experience in microwave applications, suggested that DCA consider microwave radio products manufactured by General Electric Co. and M/A-Com, Inc. A microwave solution would be extremely cost-effective, since it would bypass the local BOC, eliminating ongoing transmission facility costs. DCA would simply incur the costs of purchasing, installing and maintaining the equipment needed to transmit the microwave signal. The final cost would be approximately $17,000. However, the Federal Communications Commission's licensing requirements for this type of link, normally a 60-day cycle, made this solution unattractive.

As an alternative, T1 Transmission Systems suggested that DCA use an optical infrared transmission system to link the two buildings. No FCC licensing is needed for this type of link. The only prerequisites are line of sight between the two locations and a standard DS1 interface.

As with the microwave link, the infrared link would be more cost-effective than the leased-line solution, since the only costs involved would be for purchasing, installing and maintaining the equipment. The eventual cost of the infrared link was approximately $17,000.

> *“Microwave would be cost-effective, since it would bypass the local BOC.”*

Due to time limitations, DCA only tested one infrared unit, the ALS T-1 Atmospheric Infrared Transmission System, manufactured by American Laser Systems, Inc. (ALS) of Goleta, Calif. This unit, when compared with the microwave radio systems offered by General Electric and M/A-Com, was competitively priced and very reliable.

For example, the ALS unit features a lens heater, which ensures that the infrared beam is sent even in extremely cold conditions. Because of its cost-effectiveness and the speed at which the infrared link could be installed, DCA chose the infrared solution.

Constructing the system

While the ALS unit was selected to produce the infrared link between the two buildings, DCA installed a pair of its Netlinks to serve as the DS1 interface to integrate voice and data over the link (see diagram below). T1 Transmission Systems handled all outside cable terminations and mount construction for the ALS units. The units were installed on the roofs of both buildings, between which they produced a 500-yard infrared beam.

DCA also placed its System 355 network processor in the accounting building to serve as the data communications hub for the department's more than 30 terminal workstations. A Rolm Corp. CBX switch already resided in the headquarters building, so DCA decided to install a Rolm Very Small Communications Branch Exchange (VSCBX) switch in the accounting area at the new building for voice communications.

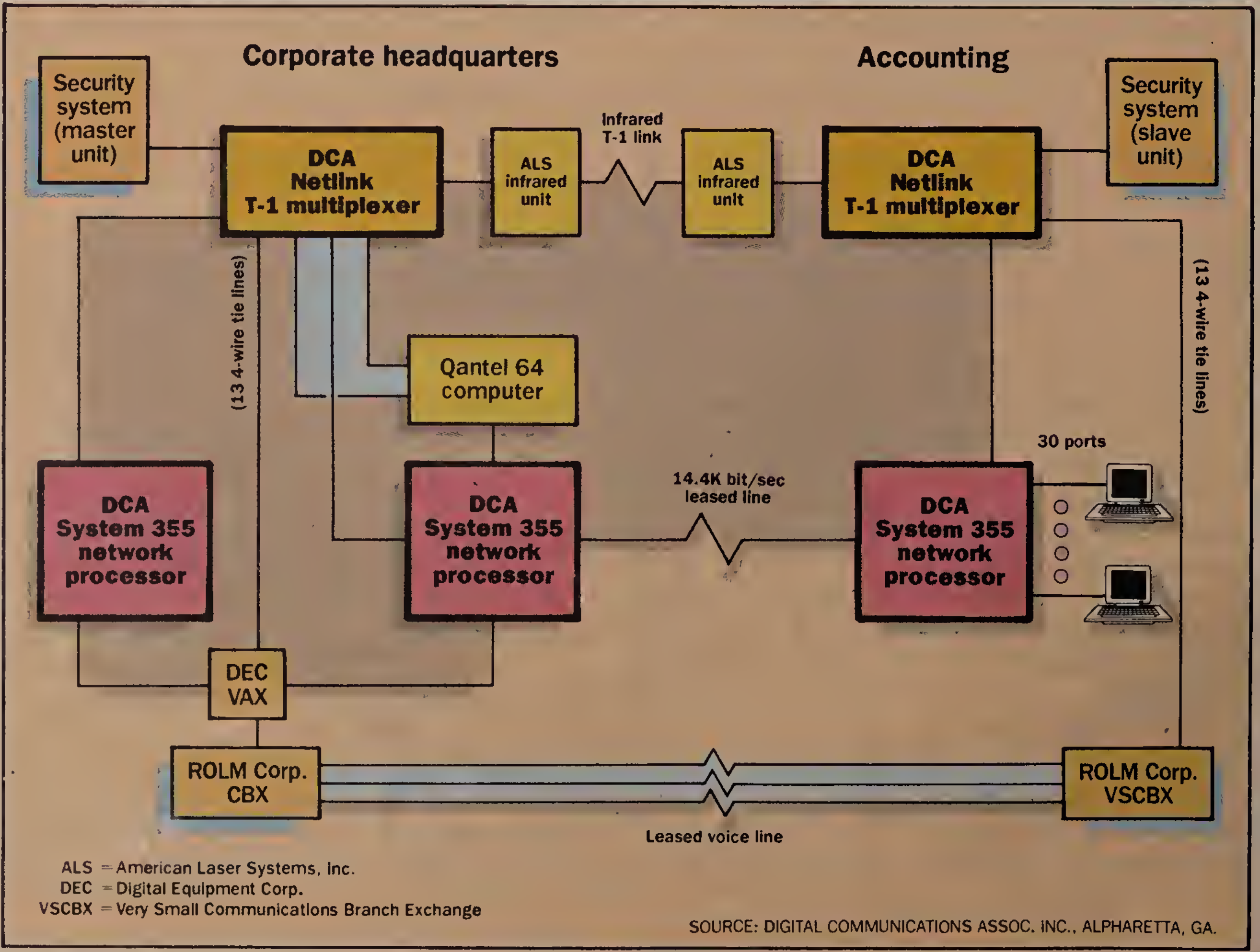
Currently, DCA uses the 1.544M bit/sec of bandwidth produced by the infrared link to transmit 13 voice and five data channels. The voice channels operate at 64K bit/sec and connect the Rolm VSCBX switch in accounting to the main Rolm CBX switch at headquarters. As a backup system for these voice lines, DCA uses three leased lines that run between the two Rolm switches.

> *“DCA placed its System 355 network processor in the accounting building.”*

Accounting users gain access to two host computers in the computer center via attachment to the System 355, which is connected to the Netlink T-1 multiplexer in the accounting building. Two 19.2K bit/sec data channels are designated for DCA's Qantel 64 computer, which is attached to a second Netlink multiplexer in the computer center at the headquarters building.

A 72K bit/sec data channel is used for communications with a Digital Equipment Corp. VAX computer, which is connected to two System 355s. The System 355s, in turn, are attached to the computer center's Netlink multiplexer. A 19.2K bit/sec data channel is reserved for use as a backup for communications between the System 355 in the accounting department and the System 355s in the computer center.

Digital Communications Associates, Inc.'s infrared link


Corporate headquarters
Accounting
Security system (master unit)
DCA Netlink T-1 multiplexer
ALS infrared unit
Infrared T-1 link
ALS infrared unit
DCA Netlink T-1 multiplexer
Security system (slave unit)
(13 4-wire tie lines)
(13 4-wire tie lines)
Qantel 64 computer
30 ports
DCA System 355 network processor
DCA System 355 network processor
14.4K bit/sec leased line
DCA System 355 network processor
DEC VAX
ROLM Corp. CBX
ROLM Corp. VSCBX
Leased voice line

ALS = American Laser Systems, Inc.
DEC = Digital Equipment Corp.
VSCBX = Very Small Communications Branch Exchange

SOURCE: DIGITAL COMMUNICATIONS ASSOC. INC., ALPHARETTA, GA.

As an additional backup system, DCA uses a leased line running at 14.4K bit/sec between the System 355 in accounting and one of the System 355s in the computer center.

The fifth and final data channel in use is a 56K bit/sec link that connects the security system in the accounting department with the master security system in the headquarters building. This channel is used to transmit asynchronous data at 9.6K bit/sec between the slave and master security system units.

Pros and cons

The major disadvantage of the system is that the infrared connection requires a line of sight between the buildings. Also, since transmission is on light-wave frequencies, the infrared link is susceptible to atmospheric conditions, particularly fog.

However, this has not been a major problem for DCA. The ALS units used by DCA possess a maximum transmission capability of one mile. DCA's application only requires a 500-yard transmission path. DCA's infrared link has been in use for almost a year, and it has been down only twice. In both cases, the link went down because of severe fog. Rain, sleet and snow, which are a problem for microwave links, have had no adverse effects on the infrared link.

The high reliability of DCA's infrared link can be attributed, in part, to the fact that the transmission path is a relatively short one. The shorter the transmission path, the stronger the infrared link is and the less susceptible it is to atmospheric conditions.

Overall, the infrared link solution has met the communications requirements of DCA in a timely and cost-effective fashion. It took fewer than 30 days to construct a complete system. The system cost less than the leased-line solution and gives DCA more bandwidth for less money.

In fact, approximately 25% of the infrared link's bandwidth is not currently allocated to any application. The extra bandwidth allows room for growth, a necessary feature of a communications system in a constantly expanding user population.

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1

My primary areas of activity. Circle ONE only.
I am involved in evaluating communications (data, voice and /or image) products and services:
1. for *use within my own* company/organization
2. for *resale* to other companies/organizations
3. Both

1a

For communications, my primary responsibility is: Circle ONE only.
1. Data Communications
2. Voice Communications
3. Both

2

Circle only the ONE title classification which most applies to you.

Company Management
11. Chairman, Pres., Owner, Gen. Mgr., Partner, Director, CIO, VP, Dir. Head of Finance, Admin. Procurement

Communications Management

Data Communications
21. Management
VP, Dir., Mgr., Head, Chief: Data Communications, including Networks, Engineering, Design, R&D, Application Development
22. Supervisory/Staff
Supervisor, Head : Networking, Design, Analysis, Engineering, R&D, Applications, Services

Telecommunications
31. Management
VP, Dir., Mgr., Head, Chief: Telecomm., Voice Comm., including Networks, Engineering, Design, R&D, Application Development
32. Supervisory/Staff
Supervisor, Head: Networks, Design, Analysis, Engineering, R&D, Applications Services

Factory Communications
41. Management
42. Supervisory/Staff

MIS/Data Processing
51. Management
VP, Dir., Mgr., Head, Chief: MIS/DP, Systems Application Development, Operations, Office Automation
52. Supervisory/Staff: Supervisor, Head of System Design, Analysis, Applications

Others
75. Consultant
80. Educator
85. Financial Analyst
90. Marketing/Sales
95. Other ______

3

Job Function
Which one of the following best describes your functional involvement with communications (data, voice, and/or video) products? Circle ONE only.

Corporate
1. Business Management, Planning and/or Development

Communications System/Network
2. Management, Planning and/or Development
3. Implementation and/or Operation
4. Other ______

4

Which one of the following best describes the primary business activity of your organization at this location? Circle ONE only.

Consultants
11. DP/Communications Consulting Services
12. Consulting Services (except DP/Communications)

End Users
13. Manufacturer (other than computer/communications)
22. Finance/Banking/Insurance/Real Estate
23. Education
24. Medicine/Law
25. Wholesale/Retail Trade
26. Public Utility/Transportation
27. Mining/Construction/Petroleum Refining/Agriculture/Forestry
28. Business Services (excluding DP/Communications)
29. Government: Federal
30. Government: State/Local

Vendors
41. Carrier: including AT&T, BOCs, Independent Telcos, Public Data Networks, Intern'l Records Carriers
42. Interconnect
43. Manufacturer Computer/Communications Equipment
44. Value Added Reseller (VAR), Systems House, Systems Integrator
45. Distributor
46. DP/Communications Services (excluding consulting)
95. Other ______

5

In which ways do you typically become involved in acquiring communications products (data, voice, and/or video) and services? Circle ALL that apply.
1. Recommend/Specify
2. Identify/Evaluate Potential Vendors
3. Approve the Acquisition
4. None of the Above

6

Check ALL that apply in columns A and B.

A. I am personally involved in the acquisition process (specification, selection, approval) for the following products and services:

B. These products and services are presently in use at this location:

	A	B	*Product/Services*
			Computers
01.	☐	☐	Micros
02.	☐	☐	Minis
03.	☐	☐	Mainframes
			Data Communications
04.	☐	☐	Communications Processors
05.	☐	☐	Comm./Networks Software
06.	☐	☐	Digital Switching Equipment
07.	☐	☐	Facsimile
08.	☐	☐	Modems
09.	☐	☐	Multiplexers
10.	☐	☐	Protocol Converters
11.	☐	☐	Network Mgmt. & Control
12.	☐	☐	Test Equipment
13.	☐	☐	3270 Controllers
			Telecommunications
14.	☐	☐	PBXs
15.	☐	☐	Key Systems
16.	☐	☐	Central Office Equipment
17.	☐	☐	Integrated Voice/Data Terminals

	A	B	*Product/Services*
			Transmission/Network Services Equipment
18.	☐	☐	Microwave
19.	☐	☐	Satellite Earth Stations
20.	☐	☐	Local Area Networks
21.	☐	☐	Wide Area Networks
22.	☐	☐	Packet Switching Equipment
23.	☐	☐	Fiber Optic Equipment
			Communications Services
24.	☐	☐	Packet Switching Services
25.	☐	☐	Cellular Mobile Radio Services
26.	☐	☐	Electronic Mail
27.	☐	☐	Enhanced Services
28.	☐	☐	Centrex

7

Estimated value of communications systems, equipment and services:

A. which you helped specify, recommend or approve in *last 12 months*?
Check only ONE in column A.

B. which you plan to specify, recommend or approve in *next 12 months*?
Check only ONE in column B.

	A	B	
1.	☐	☐	Over 10 million
2.	☐	☐	$5-10 million
3.	☐	☐	$1-5 million
4.	☐	☐	$500,000-1 million
5.	☐	☐	$250,000-500,000
6.	☐	☐	$100,000-250,000
7.	☐	☐	$50,000-100,000
8.	☐	☐	Under 50,000
9.	☐	☐	Don't know

8

Estimated gross annual revenues for your entire company/institution:
Circle only ONE.
1. Over $1 billion
2. $100 million to $1 billion
3. $5 million to $100 million
4. Under $5 million

9

Estimated number of total employees at this location:
Circle only ONE.
1. Over 5,000
2. 1,000-4,999
3. 500-999
4. 250-499
5. 100-249
6. 50-99
7. 20-49
8. 1-19

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▶ HAND-HELD COMPUTERS

Data to go

A profusion of portables permeates the marketplace.

BY KARYL SCOTT
Washington, D.C. Correspondent

Portable terminals can be taken practically anywhere for data collection. Most can withstand extreme temperature and rough handling. Some come with laser scanners or bar code readers and have various types of keyboards and small two- to four-line displays.

The 25% projected annual increase in the portable data terminal market for the 1980s reflects the importance that businesses are placing on remote data processing and communications. The portable market reached $250 million in sales for 1985. The rising number of applications for hand-held data terminals is limited only by users' imaginations.

Not too long ago, hand-held terminals were used almost exclusively in the retail industry for inventory control and order entry. Now they are found in aerospace, utilities, entertainment, health care, automobiles, transportation industries and government.

The proliferation of portable data terminals is clearly a result of user demand. It is not a situation of a technology in search of a market as in other high-technology niches. The number of vendors in this niche industry has been increasing steadily in recent years. There are now about 100, according to Gray Glass, financial industry analyst at Kidder-Peabody and Co., Inc. The top vendors are those that are providing customers with microcomputer processing power, new communications capabilities and application software to suit user-specific activities.

The industry leader today, with slightly more than 25% of the market, is an $80 million company in Akron, Ohio, called Telxon Corp. The firm attributes its success to its ability to provide the necessities for a network of hand-held terminals that communicate with a corporate host. Telxon claims it can supply total systems, from hardware to specialized application software.

"We go to customers with our systems people and design application-specific software," says Randy Veatch, director of marketing at Telxon. "We custom-fit the equipment to the user's needs. In this business, you have to go to the customer with an open mind. You have to ask what they want and then attack their problems. We find many of our customers are not sophisticated computer users and do not want to write their own custom software," Veatch says.

Telxon designs, manufactures and markets interactive Portable Tele-Transaction Computers (PTC). The devices can gather, process and store on-site or remote data and communicate it to the corporate host. The PTCs incorporate a proprietary operating system, application software and peripheral devices such as hand-held printers and communications devices.

The more sophisticated hand-held computers now on the market rival early personal computers in processing power and memory. Some have up to 1M byte of storage. They are programmable and can communicate over a standard telephone hookup or radio transmission. Although most models have built-in radio devices, the more sophisticated terminals come with built-in modems.

As users' demands increase and as manufacturers answer those needs with more functionality, the portable computer will increasingly resemble the personal computer. Because of their broadening capabilities, portable data terminals are gaining attention as strategic tools and as integral parts of corporate information systems.

Among Telxon users are AT&T, which also remarkets Telxon equipment, the Bell operating companies, Coca Cola USA, McKesson Drug Co., Hughes Aircraft Co. and Associated Grocers, Inc. Wal-Mart Stores, Inc. is Telxon's largest customer, contributing $12 million in sales in 1985. The reason a firm invests from a few hundred dollars to $1,000 for a hand-held terminal is payback.

Coca Cola USA sales representatives automate their order-taking process by entering sales orders on portable terminals while out on the road. The information is transmitted over a telephone hookup to the corporate mainframe. According to a Coca Cola USA executive, the implementation of the Telxon PTC portable terminals is an example of strategic use of computer technology to improve customer satisfaction and to ease data handling by sales employees. The 5-year-old application provides quick reaction to the market, said Jacob Waller, vice-president of Coca Cola USA, in a Telxon advertisement.

Norfolk and Western Railway Co. uses hand-held terminals to reduce automobile damage claims when it transports new automobiles to dealers. Instead of punching in and microfilming inspection reports, railroad employees enter data right on the scene. Since 1982, portable data technology has eliminated 80% of the need to microfilm, resulting in 500,000 fewer microfilmed copies of inspection reports per year.

Hughes uses Telxon hand-held computers and attachable laser bar code scanners to keep track of sophisticated test equipment used in the development of communica-

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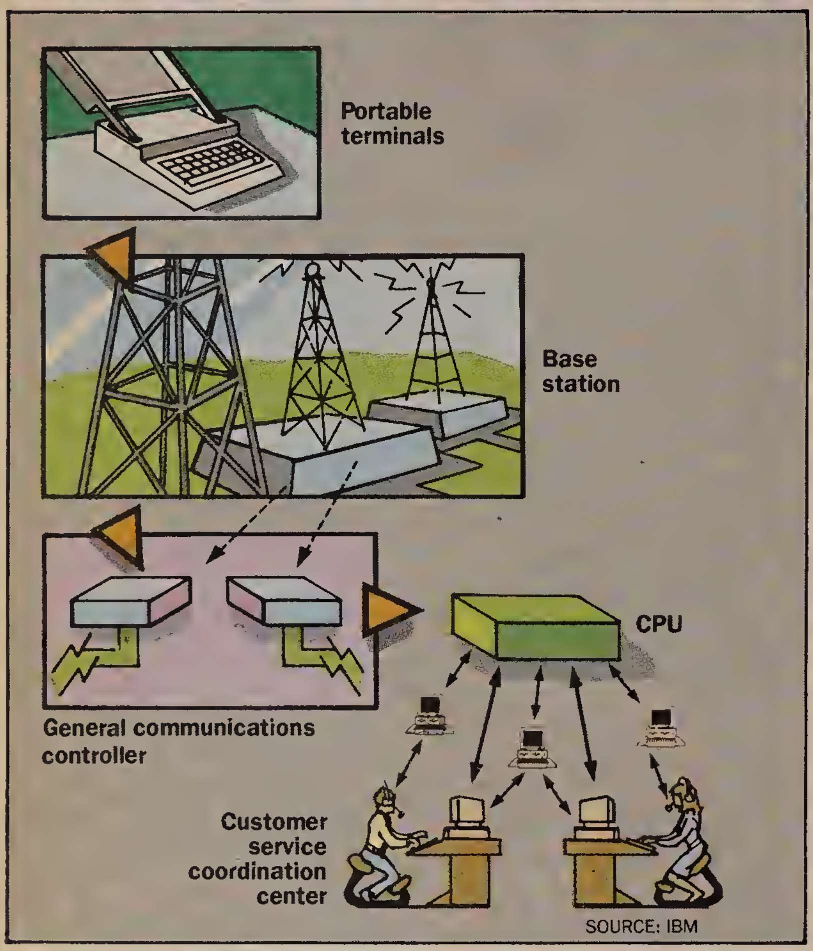
tions satellites. The scanner reads bar codes on equipment and keeps record of 65,000 items located throughout 33 buildings in Southern California and at Kennedy Space Center in Cocoa Beach, Fla.

Veatch predicts that the next biggest market for portables will be the Manufacturing Automation Protocol factory environment. "PTCs could form a subnet within a MAP network to collect and transmit various forms of factory data, keep track of personnel, perform audit trails, sample raw materials and send the information back to the host for analysis and quality control," he says.

Some vendors are even developing microcomputer asynchronous nodes that will allow PTCs to tap into local-area networks in various work environments, Veatch says.

IBM Digital Communications System


Portable terminals
Base station
CPU
General communications controller
Customer service coordination center

SOURCE: IBM

MSI Data Corp., once the industry leader, is now a close second to Telxon with slightly less than 25% market share. MSI's latest product, the PDT III, is a portable terminal with 16K to 256K bytes of random-access memory. MSI doesn't write custom application software. The company does, however, provide the basic operating system — the MSI UBasic language that can run on the Digital Equipment Corp. VAX, MicroVAX and IBM Personal Computer XT and Personal Computer AT. Appgen and Autogen are software development tools sold by MSI that allow users to develop application software for their terminals.

Communicating with a host is achieved though terrestrial phone links with the use of an acoustic coupler. Some of MSI's terminals come with built-in modems. Data can be transmitted at speeds of 300 bit/sec and 600 bit/sec, or 1,200 bit/sec and 9.6K bit/sec.

Laser scanners and bar code readers can be added to the terminals, as well as data conversion units that can receive transmissions while the terminals are unattended. MSI markets to the retailing and distribution industries, manufacturing and medical organizations and the federal government.

Norand Corp. of Cedar Rapids, Iowa, is another major figure in this marketplace, with approximately 15% of market share. A subsidiary of genetic seed developer Pioneer Hi-Bred, Inc., Norand specializes in the route accounting business, selling terminals to beverage companies, dairy distributors and bakery product firms. Norand terminals allow users to track inventory, enter customer purchases and perform billing functions.

Federal Express Corp. is a major Norand customer. Federal Express delivery crews have data terminals in their trucks to update host systems on the status of parcels, to track lost items and to access host-based information.

K Mart Corp. is a Norand customer that uses the portable terminals for price checking. Through radio transmission, store clerks can check prices of items on shelves by communicating with a host computer or personal computer in the store's back office for local-area communications.

Terminals are only part of Norand's product offerings. The company also sells the RT1200 radio network that permits real-time interaction between portable terminals and a corporate host. As part of the network, terminals come equipped with FM radio transmitters and receivers.

Although Motorola, Inc. is one of the largest companies in the portable business, its market share is relatively small. However, Motorola clinched a sweet deal when IBM chose it to provide terminals for IBM's fleet of service representatives. Motorola sells two hand-held models — the KDT 480 and KDT 800. In addition, Motorola has created a digital data network to provide links for users who don't have their own private networks for radio transmission. Terminals can function in various modes over this public network. They can operate in a terminal emulation mode, host access mode or messaging mode, according to William Muilkens, national data consultant manager at Motorola.

"We are seeing many standard PC applications extended to the portable terminals," Muilkens says. "It's up to the users to decide how far they want to go."

Motorola designed the terminals, base station and controllers to IBM's specifications. IBM designed the system network, the host system, major application software and the network architecture that is a modified version of Systems Network Architecture using Synchronous Data Link Control between the host and controllers. Motorola developed the proprietary protocol used between the controllers and the terminals.

IBM developed applications that allow field service representatives to respond to customer service calls more quickly and effectively. The hand-held terminals do away with pagers and the need to telephone service headquarters for complete information on the service call.

Users of the system say it has revolutionized service at IBM, eliminating the need to send paper reports and parts orders. Company officials say it has already paid back on the initial investment, and all sales representatives are expected to be outfitted with terminals by the end of the year.

IBM's experience with the portable terminal is indicative of the growing popularity of these time-saving devices.

"The outlook for this market is extremely positive," Kidder-Peabody's Glass says. "There's an enormous amount of potential for this market that is constantly being redefined as new users and applications are developed."

Pro from **page 27**

moval of the unregulated business restriction would expand the range of products and services available to consumers, and it would also allow fair competition.

The current waiver process for entry into new businesses precludes Pacific Telesis Group and the other RBOCs from responding to customer needs and market opportunities. It is also anticompetitive because it forces the RBOCs to reveal their marketing intentions publicly, thereby giving competitors an unfair advantage.

Both the FCC and state regulatory agencies have comprehensive processes in place to assure there is no cross-subsidization of new business ventures by the RBOCs' regulated local telecommunications companies. In addition, safeguards currently being considered by the FCC in its Third Computer Inquiry would adequately protect users against local telecommunications companies that are gaining a competitive advantage.

One such advantage is the so-called bottleneck that might be created by local operating companies declining customer premises equipment vendors access to the public switched network. Given the adequacy of such safeguards, it makes little economic sense to prohibit or slow down the entry of the RBOCs into unrelated businesses.

The problem with our national telecommunications policy is not the lack of appropriate jurisdiction of state and federal regulatory agencies; it is the inconsistency and delay that result from a redundant layer of judicial regulation on top of existing mechanisms.

What is needed is a new national telecommunications policy that places responsibility for overseeing the evolution of the industry where it belongs — with existing regulatory agencies under congressional oversight. Beyond that, a careful evaluation of the Consent Decree is needed, particularly regarding network-provided information services and entry into unrelated businesses. This will assure that the RBOCs are able to serve their customers and shareholders effectively, while making the maximum possible contribution to the health of the U.S. economy.

Con from **page 27**

In the end, the rate-paying consumer will pay higher phone bills to finance this unnecessary expansion by the BOCs.

This expansion is unnecessary because there is nothing that the BOCs buy today that cannot be supplied by one of the more than 500 domestic manufacturers of telecommunications equipment.

The best way to protect the ratepayers is for the BOCs to procure equipment on a competitive basis.

These are some of the substantive reasons why one of the Modified Final Judgment restrictions should not be lifted. There are reasons behind the other restrictions as well. It is clearly a complex issue, one that should not be prejudged by an arbitrary transfer of authority. The issue of due process is involved, and in the industry coalition opposed to the Dole bill, one hears talk of "court stripping" (the passing of laws that deprive the courts of some of their authority). The way to refine the Modified Final Judgment is to wait for the report on it to be completed — by Jan. 1, 1987. The report is mandated in the Modified Final Judgment and is currently being written by a Justice Department consultant. When that report is in, it will be time to consider lifting the restrictions.

In the meantime, let no one be fooled by the argument that the FCC is the proper home for telecommunications policy. That statement is more a reflection of FCC Chairman Mark Fowler's desire for dominion over that policy than a reflection of anything in the real world. Furthermore, the U.S. Department of Commerce and the U.S. Department of State are not likely to relinquish their territorial claims, even if Judge Greene and the Justice Department are removed from the picture.

The issue is whether the BOC restrictions should be lifted. Nothing less is at stake than nullifying lawful judicial and antitrust processes, encouraging higher local telephone rates, complicating the task of utility regulators and jeopardizing the new competitive environment for telecommunications equipment and longdistance and information services.

▶ POLITICS

Danforth expected to act on telecom issues

Senator may support, toughen Dole bill.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — U.S. Sen. John Danforth (R-Mo.) is expected soon to announce plans either to introduce legislation allowing the regional Bell operating companies to enter businesses that have been off limits since the divestiture, or to join Sen. Robert Dole's (R-Kan.) effort to win approval for the Federal Telecommunications Act of 1986.

Danforth, chairman of the Senate Commerce Committee, is expected to announce a hearing schedule for the Dole legislation prior to the congressional summer recess beginning Aug. 15. Under Danforth's plan, hearings would be held in September prior to Congress' adjournment in October.

The Federal Telecommunications Act of 1986, introduced by Dole in June, calls for the transfer of control of the AT&T and GTE Communications Corp. consent decrees from U.S. District Court Judge Harold Greene and the Department of Justice to the Federal Communications Commission. If the bill is passed, the FCC would have authority to decide the business realms in which the RBOCs can operate.

A Commerce Committee aid confirmed that Danforth will take some sort of action on the telecommunications issue but is still considering his options. Danforth was expected to meet with Dole on the Senate floor late last week to discuss the Federal Telecommunications Act, according to a Commerce Committee staffer. The staffer said Danforth's effort will not compete with Dole's legislative moves.

Observers say if Danforth goes forward with the Dole bill, he will likely add amendments that would impose more stringent guidelines over FCC execution of the Modified Final Judgment. Danforth is said to be against giving the FCC carte blanche to remove RBOC line-of-business restrictions.

The amendments would outline the pro-labor, pro-trade and pro-competition goals of concern to Congress. Guidelines would ensure protection of ratepayers from excessive rate hikes and the subsidization of new lines of business by ratepayers.

Danforth solicited written comments earlier this year from members of the telecommunications industry and members of various federal agencies on the issue of whether to permit the RBOCs to participate in new lines of business.

The Commerce Committee staff is said to have drafted several possible bills incorporating the concerns expressed by respondents.

Starlan from **page 1**

in a star topology.

Traditional local-area network vendors such as 3Com Corp. and Fox Research, Inc. are already committed to providing products based on the low-speed Ethernet technology. A number of personal computer manufacturers and vendors of microcomputer add-on board products have also expressed interest in developing such products, according to semiconductor makers who have introduced chip sets based on the specification. Farther down the road, Starlan network interfaces may be built directly into microcomputers.

Athough Hewlett-Packard Co. and Wang Laboratories, Inc. were among the computer vendors promoting approval of the 802.3 standard, product announcements are not imminent from either company. "We're investigating the technology and helping develop it," said Joe Skorupa, product manager for IEEE 802 local networks at Wang."I think the technology will be popular. It has substantial vendor support."

AT&T's Starlan was the first network conforming to the specification to be introduced by a major vendor. As a result, many of the products now being developed are referred to as Starlan-compatible. Several vendors have said, however, that the development of this standard and the subsequent growth of the market for these products are not tied to AT&T's influence.

"A myriad of LAN manufacturers and PC manufacturers have commitments to Starlan products," said Jack Landau, product manager for Western Digital Corp. On July 22, the Irvine, Calif., chip maker introduced a family of Starlan chip and board-level products. Aimed at local-area network and computer manufacturers, the products include several semiconductor devices: a personal computer interface controller, a miniature hub controller designed to allow up to 11 personal computers to be linked in a daisy chain up to 800 feet long and a hub controller.

In addition to chip level products, Western Digital is offering computer vendors an adapter board that uses the miniature hub controller to provide an integral hub, a 10-port Starlan hub and a personal computer adapter board,.

Western Digital's products allow users to configure a network with up to 10 hub levels; the specification calls for support of five hub levels. (The term 1-Base-5 refers to the 1M bit/sec speed and the maximum distance of 500 meters that two stations connected to the same hub can be from each other.) Landau anticipates vendors will price interface boards, which will be aimed at end users, under $300, boards with the integral hub at under $400 and the 10-port hub at less than $600.

Retix Co. of Santa Monica, Calif., last week announced a 12-port Starlan hub, the HB-12, based on the 802.3 1-Base-5 specification. Aimed at computer manufacturers and other systems developers, the HB-12 is priced at less than $300 in quantity. When sold to end users, the hub will probably be priced at around $650, said Charles Fogg, vice-president of marketing and sales.

Retix already offers several Starlan-compatible products. Last March, the company introduced a six-port hub that supports a two-level hub configuration. Fogg said the company announced a board-level product last September and has been selling it in production quantities since January.

Like several other industry participants, Landau at Western Digital believes it won't be long before network interfaces will be built into microcomputers. "Starlan is on a track where, in a year or two, the technology will find its way onto a motherboard," Landau said, rather than being implemented on a separate add-on board as it is today.

Semiconductor vendor Chips and Technologies, Inc. in Milpitas, Calif., expects traditional vendors of microcomputer add-on boards to be offering Starlan-compatible interface boards within a year, according to Sikander Naqui, product marketing manager. "[Starlan] is becoming a PC add-on product," Naqui said. Chips and Technologies introduced its own Starlan interface and hub controller chips last May. Because of its low price and relatively simple technology, Naqui believes Starlan is likely to be one of the most popular local networks in the micro environment.

EPSCS from **page 1**

work nodes.They pay a flat monthly fee for the service, while users of shared EPSCS are billed according to usage. Users of the basic service must also acquire their own intermachine trunk lines.

The president of the EPSCS User Group told *Network World* last week that several users of shared EPSCS are considering installing private microwave links to bypass the local telephone companies and thus reduce the cost of location-to-central-office links. Bypass measures are being considered, he said, because users hope to avoid abandoning the service altogether.

Tom Scott, EPSCS User Group president and an employee of Xerox's Real Estate/General Services Division, said Xerox currently spends $800,000 per month to use some 4,000 lines that connect 250 company locations to the shared EPSCS network. "The cost of network access lines has become a major problem. The situation has reached the point where Xerox has begun exploring network alternatives for the future," Scott explained.

To cut access line costs, Scott said the company is examining digital network options that could handle both voice and data transmission — including non-AT&T services.

EPSCS users represent AT&T's largest national accounts and reportedly include such huge corporations as EI DuPont, Exxon Corp., Ford Motor Co., General Foods Corp., Mobil Corp., Transamerica Corp. and United States Steel Corp. AT&T would lose an enormous amount of revenue if one or more of these users were to abandon EPSCS.

The EPSCS network comprises 17 AT&T EPSCS nodes dispersed throughout the country. Each such office houses one — and in a few instances a pair of — dedicated 1ESS analog central office switches. EPSCS users send an average of several million minutes of voice and data transmissions across the network each month. Data is transmitted at speeds up to 4.8K bit/sec.

Joe Britell, switched services district manager for AT&T, stated that the company will not provide facilities to disgruntled users of shared EPSCS that could be used to bypass any of the BOCs.

"The users are the masters of their own destinies in this situation. We are not in the access business, and we do not encourage bypass," Britell said.

Joaquin Gonzalez, an analyst with Stamford, Conn.-based Gartner Group, Inc., a market research and consulting firm, argued that AT&T is making life difficult for EPSCS users in an attempt to draw them to the company's Software-Defined Network (SDN). "The mere fact that AT&T can offer access to SDN through a switch in Miami illustrates that, if AT&T wanted to, it could offer shared EPSCS on a much wider basis," Gonzalez explained. A user located in Miami would have to acquire an access line or lines to link to the shared EPSCS switch in Atlanta.

Users of shared EPSCS are increasingly unsettled by the rising cost of lines connecting their facilities with the various network's points-of-presence, particularly in cases where they must procure interstate long-distance lines to reach the nearest point of presence.

Bob Tobin, a member of Eastman Kodak's information systems group, claimed the cost of hooking 80 Eastman Kodak locations to the shared EPSCS network with roughly 740 access lines represents 40% of the amount the company spends to use the service in a month. "Access line costs are killing us," he stated. "Costs are way out of control."

Tobin said Eastman Kodak sends roughly 2.5 million minutes of calls over the network each month. Eastman Kodak is considering bypassing the BOCs in several states by using private microwave facilities. The company is currently performing a satellite networking study exploring whether satellite technology can be used to alleviate the access line situation.

Calendar

Aug. 13-15, Rockville, Md. — Data Communications. Also, Aug. 18-20, New York; Aug. 25-27, Detroit; Sept. 3-5, St. Louis, Mo.; Sept. 10-12, San Antonio, Texas. Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Aug. 13-15, LaJolla, Calif. — IBM Products and Architectures. Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Aug. 13-15, Boston — SNA Architecture and Implementation Seminar. Contact: Communications Solutions, Inc., 992 S. Saratoga-Sunnyvale Road, San Jose, Calif. 95129.

Aug. 13-15, Boston — Data Communications: Fundamentals and Beyond. Also, Aug. 20-22, Indianapolis. Contact: The American Institute, Carnegie Bldg., 55 Main St., Madison, N.J. 07940.

Aug. 13-15, Somerset, N.J. — Internetworking and Advanced Protocols. Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

Aug. 14, Minneapolis — The IBM PC Data Communications Survival Course. Also, Aug. 19, Chicago; Aug. 20, Rochester, N.Y.; Aug. 21, Boston; Aug. 28, Dallas. Contact: Data-Tech Institute, Lakeview Plaza, P.O. Box 2429, Clifton, N.J. 07015.

Aug. 18-20, Boston — Data Networks: Management, Operation and Control. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

Aug. 18-22, Washington, D.C. — Radio Wave Propagation for Communications System Design. Contact: The George Washington University School of Applied Science, Washington, D.C. 20052.

Aug. 19-20, Washington, D.C. — Advanced Communication Architecture. Contact: Communications Solutions, Inc., 992 S. Saratoga - Sunnyvale Road, San Jose, Calif. 95129.

Aug. 20-21, Osterville, Mass. — Introduction to Fiber-Optic Communication Systems. Contact: Hinckley Communications, 14 Parker Road, Osterville, Mass. 02655.

Aug. 21-22, New York — Introduction to Communications Security. Contact: Computer Security Institute, Dept. ERC, 360 Church St., Northborough, Mass. 01532.

Aug. 23-24, Atlanta — Softeach: The Computer Products Training Forum. Contact: Softsel Computer Products, Inc., 546 N. Oak St., P.O. Box 6080, Inglewood, Calif. 90312.

Aug. 25-27, Chicago — Telecommunications Systems: Technology and Planning. Also, Sept. 15-17, San Francisco. Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 26-28, San Mateo, Calif. — Interconnect '86: The Second Annual West Coast CPE Show. Contact: United States Telecommunications Suppliers Association, 333 N. Michigan Ave., Chicago, Ill. 60601.

Sept. 2-6, Chicago — Office Automation Society International's Fourth Annual Conference. Contact: The Information Exchange, Office Automation Society International, 15269 Mimosa Trail, Dumfries, Va. 22026.

Sept. 4-6, Kansas City, Mo. — The Second Computer & Business Equipment Showcase. Contact: The Interface Group, Inc., 300 First Ave., Needham, Mass. 02194.

Sept. 7-10, Nashville — The Southeastern Telecommunications Association (Seta) 1986 Annual Conference. Contact: Seta, P.O. Box 901, Richmond, Va. 23207.

Sept. 9, Arlington, Va. — National Capital Datapoint User Group Meeting. Contact: Margaret Valavanis, OSP/WHS/DCOAR, The Pentagon, Room 1C730, Washington, D.C. 20301.

Sept. 9-11, Las Vegas, Nev. — Eighth Annual Satellite Communications Users Conference. Contact: Satellite Communications, 6530 S. Yeosemite St., Englewood, Colo. 80111.

Sept. 10-11, San Francisco — Educational Seminar on T-1 Facilities and Networking. Contact: Timeplex Seminars, Timeplex, Inc., 400 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675.

Sept. 11-12, Washington, D.C. — Strategic Planning and Information Systems. Also, Oct. 2-3, New York; Dec. 4-5, New York. Contact: New York University, School of Continuing Education, Seminar Center, 575 Madison Ave., New York, N.Y. 10022.

Sept. 17-19, Washington, D.C. — Bypass Networking with Small Satellite Terminals. Also, Nov. 19-21, San Francisco. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

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The New York City Housing Authority will receive sealed proposals at 250 Broadway, New York, N.Y. 10007, in Room 711 on the 7th Floor from 9:00 A.M. to 4:30 P.M. daily until 12:00 Noon of Monday, September 8, 1986; thereafter these bids are to be submitted in Room 2403A on the 24th Floor until 2:00 P.M., of September 8, 1986 after which time no further bids will be accepted for an ENERGY MANAGEMENT INFORMATION SYSTEM.

The deliverables will include further definition of Business Systems Design; the Computer System Design; Coding, Testing and Implementation.

Proposals will be publicly opened and read at the office of the New York City Housing Authority at 2:00 P.M. in Room 2403-A on the 24th Floor, on Monday, September 8, 1986.

The selection will be made on or about September 24, 1986, after all properly submitted proposals have been evaluated, rated, and adjusted in accordance with the terms of the request.

Requests for Proposal (R.F.P.) can be obtained daily at New York City Authority offices, 250 Broadway, in Room #711 on the 7th Floor during the business hours of 9:00 A.M. to 4:30 P.M., weekdays from Mr. Wm. Steinmann or from Mr. Nicholas Calace.

A bidders meeting will be held in the New York City Housing Authority offices at 250 Broadway, New York, N.Y. 10007 in Room 2403-A on the 24th Floor on August 27, 1986 at 2:00 P.M.

Inquiries regarding this R.F.P. may be made by calling Mr. William Steinmann at (212) 306-3721 or Mr. Nicholas Calace at (212) 306-3705.

▶ USER PROFILE

Johnson gets 2nd shot

Woolworth network comes around again.

BY MARGIE SEMILOF
Senior Writer

NEW YORK — Bill Johnson, director of hardware planning and telecommunications for F.W. Woolworth Co., has been given a rare second chance to bring the retail giant's long-neglected, five-and-dime network out of the dark ages. Shifts in the company's upper management have ushered in a new understanding of the strategic importance of communications and have given Johnson the opportunity to pick up where he once left off in revamping Woolworth's network facilities.

The job of orchestrating Woolworth's communications renaissance already has Johnson up to his elbows in strategic plans. Woolworth is centrally managed from its corporate headquarters here, but almost all of the company's 4,200 U.S. stores freely choose their own mixed bag of communications equipment.

Johnson is attempting to devise methods of linking end users and the manufacturers from which the company buys products to headquarters. Johnson's goal is to slash the company's communications costs and speed up its order processing system.

The 17-year company veteran has been tinkering with Woolworth's communications system since 1969. He started out working part-time as a unit record operator in the company's Milwaukee data center while attending the city's Metropolitan School of Automation. Johnson worked his way through the MIS department as a computer operator and an applications development project manager. He also worked as an MIS liaison in the consumer credit department. At the Milwaukee facility, Johnson helped establish a Systems Network Architecture network that now interconnects all Woolworth stores and subsidiaries.

In 1979, Johnson was plucked from his job as a computer operations manager to serve as acting operations manager in the New York headquarters, where he filled in for a colleague. That colleague subsequently left the company and Johnson stayed on the job.

The New York office is the focal point for all Woolworth subsidiaries, both domestic and international, which include such companies as Anderson-Little Co., Inc. and Kinney Shoe Corp. Despite its distinction as a hub site, Johnson described the New York data center as "antiquated" compared with the company's 21 regional U.S. data centers. Until very recently, data processing was handled using punch cards, and communications between other U.S. Woolworth facilities was a matter of mailing computer tapes.

"At the time, senior management [in New York] thought MIS was a necessary evil," Johnson recalled. "They felt that as long as data processing had run this way for years, why change?"

The New York office was reeling from significant staff turnover when Johnson arrived. He had to build both a computer data center and reconstruct the company's technical staff. Johnson said he welcomed the challenges because, "It was an opportunity to apply knowledge gained from the previous 10 years and to start something from scratch."

Johnson got his feet wet by first upgrading some of the simpler telephone equipment and automating several administrative functions. During a year's time, he hired 65 communications and computer staffers. Johnson became technical support coordinator, and he lured a former coworker from the Milwaukee data center to serve as operations manager in New York.

Johnson concurrently focused on upgrading telecommunications equipment in the company's Woolco subsidiary, which accounted for the largest portion of Woolworth's communications expenses. He first attempted to take inventory of existing telephone equipment in Woolco stores. "The job was no picnic," Johnson said. Each store was equipped with an eclectic variety of telecommunciations tools, purchased by store managers. Much of the gear was 40 years old, Johnson said. Johnson dropped the inventory idea when he realized the variety of equipment was too vast to record. He ended up tromping through each facility, replacing old telephone equipment with new. "Not only did we put in state-of-the-art equipment," he boasted, "but we also lowered expenses. We began to earn management's respect."

The crusade to refurbish Woolco's communications equipment rolled along smoothly until 1982, when Woolworth decided to close the chain of stores. Johnson had to let his entire newly built telecommunications staff go and disband the project of upgrading company communications facilities. He was relegated back to the computer hardware planning department.

"Management decided they didn't need the high-priced communications talent, nor the focus on the Woolco side of the house," he recalled. "I know I could have convinced them of the importance of communications if Woolco had stayed around."

Johnson's setback was short-lived. One year later, Woolworth corporation reshuffled its upper management, making key changes in several departments, including MIS. He said the new MIS management brass understood the critical need for Woolworth to refocus on upgrading telecommunications systems.

To Johnson, this new attitude also meant rebuilding the staff he had only recently dismantled. The job of hiring was more complicated during this period, he recalled, "Because it was during divestiture, and everyone else was looking for people." Johnson developed the telecommunications staff by cross-training MIS employees.

"That established a good base," he said. "We could get a few projects done and show management we could get something moving." By 1985, Johnson again received official responsibility for total corporate communications.

Johnson's new role includes developing a strategic communications plan for the entire corporation, a task he describes as "damn near impossible." To keep a handle on the communications inventory at each facility, he established a telecommunications management group. The group is represented by key communications employees from each Woolworth subsidiary. They meet regularly to establish corporatewide standards and discuss future network plans.

The company still must make key decisions as to how much money should be allocated to the telecommunications budget. Communications costs were typically lumped together into one sum, like a utility bill. "I can get gross figures from old accounting files," he said. "But one number doesn't do any good. The trick is to dissect that figure and break it into components."

Until the company is able to nail down communications costs, the Woolworth network will remain largely in its planning stages. So far, each DP center has been connected via SNA links for resource sharing. Most employees are using terminals, but Johnson is considering personal computer options. Some services, such as T-1 facilities or software-defined networks, might be employed more quickly, he said, because they can be quickly researched and result in a more immediate cost savings. Johnson evaluates most projects with an eye for simplicity.

"That eliminates a lot of vendors," he said.

Johnson must also consider some cornerstone management decisions. For example, there must be a consensus as to which department will have control over the network. In the past, there was no central point of responsibility for communications.

"It's tough pulling [communications] responsibility out of the pockets where it has been so long," Johnson said.

"My objective is not to have me handle the company's entire communications tasks," he said. "I am more concerned that whatever we end up doing, we do with some corporate-developed standards."

Private line from **page 6**

analog switches with digital facilities, are attempting to develop a captive customer base for future enhanced network services. But the strategy may have other consequences.

"People who have to use private lines for technical reasons will be cross-subsidizing other services," he said.

The Access Restructure Tariff is the second recent effort by the companies to change private-line tariffs, Montgomery said. Currently pending before the FCC are filings by New England Telephone and New York Telephone that would also increase the cost of the local portion of private-line service provided by the two companies. If approved, the increase in the so-called special access tariff would cost New York Telephone and New England Telephone customers $40 million this year alone.

"Tied in with the other rate increase they want, private-line costs could go way up," Montgomery said.

The ad hoc committee persuaded the FCC to temporarily postpone implementation of this so-called special access tariff increase ("Hikes halted," *Network World*, July 28).

Combatting bypass

Montgomery said the two Nynex companies have justified their recent private-line rate hike as being necessary to combat the threat posed by users bypassing the local network.

According to Montgomery, in the last two years, the carriers have changed the meaning of bypass to suit their own needs. Initially, Montgomery said, bypass referred to users employing private facilities to link their networks directly to long-distance carriers.

The carriers now use the term in reference to the use of private lines to avoid the local switched network, despite the fact that the local operating companies supply the local portion of the private-line service.

Montgomery terms the changing definition of bypass as "intellectually dishonest."

David Bradley, of New York Telephone, denied the charge and said that there is more than one valid definition of bypass.

Corrections:

The article "Users rap IBM links" (*Network World*, July 14) incorrectly stated that IBM's time-sharing option (TSO) software supports access to a mainframe for only one personal computer at a time. In fact, the TSO will support multiple personal computer access to a mainframe.

"Speak now — or pay later" (*Network World*, July 21) incorrectly reported that U.S. District Court Judge Harold Greene must approve all requests for waivers of the Modified Final Judgment. Actually, Greene must approve a request by the parties to the decree to vacate the decree.

▶ COMPARATIVE REVIEW

Subscribing to the invisible service center

AT&T's Dataphone I Plus, PacTel's Spectrum enter network monitoring showdown.

BY JOHN J. HUNTER
Contributing Writer

Tired of fighting with equipment vendors and carriers when problems occur in the data communications network? Weary of constantly recruiting competent test and measurement professionals? Subscribing to a turnkey monitoring and control service may be the solution.

Such a service supplies the equipment, monitors network operation and fights with equipment vendors and carriers to get problems fixed.

Within the turnkey monitoring and test market, there are two key players: AT&T's Dataphone I Plus service and the relatively new PacTel Spectrum Services, Inc.'s Spectrum.

Dataphone I Plus works with analog, point-to-point or multipoint lines and is essentially a reactive service. The system centrally monitors and diagnoses data network problems down to the data terminal equipment. It will automatically take the malfunctioning terminal off line and notify the user of the defect.

However, the user must then repair the data terminal and circuit equipment. Dataphone I Plus operates with point-to-point and multipoint configurations, but only tests a total of 48 modems. The Spectrum service supports as many as 132 devices per basic configuration. Dataphone I Plus is pure AT&T, except for its terminals. The service works only with Dataphone I modems and the older AT&T 100/200 series.

AT&T service centers monitor networks in the Dataphone I Plus system and issue diagnostic tests to customer premises equipment such as modems and terminal devices. The heart of the service is an AT&T 3B5 computer with a data base listing all customer equipment being monitored, including modem serial number, speed and network component address.

This information identifies the products to be tested and the types of tests to be run. The user location contains a remote data access unit (RDAU) and a network interface. The RDAU wraps around the modem being monitored and conducts the tests. The network interface is the link between the service center and the RDAU. Such service centers are called data maintenance operations control centers (Mocc).

The Moccs access the RDAU via two dial-up lines. One line establishes the link from the Mocc, and the other handles the link to the center. Users are responsible for these lines.

Dataphone I Plus has no provision for monitoring customer locations continuously; customers must detect equipment malfunction and report it to the Mocc handling that account. If that center is out of service, so are the customers. Upon receipt of a malfunction, Mocc personnel will dial the applicable RDAU, conduct the diagnostic tests and initiate appropriate action. Such tests include determining the analog condition of the line and conducting digital loop-back tests to the local terminal device. Remote digital loop-back testing is not supported by AT&T's Dataphone I Plus.

The Moccs can also test the RS-232-C signals on the terminal and take a disabled terminal off-line.

The AT&T Dataphone I Plus customer is responsible for the replacement or repair of the network equipment if it has been purchased from AT&T. If the gear is leased, the Mocc will dispatch field-service personnel to clear the problem. Mocc will refer any facility problems, such as transmission lines, to the appropriate vendor and will provide follow-up until cleared by that agency. AT&T Information Systems is also responsible for all false alarms that summon the service center.

PacTel system outshines

The PacTel Spectrum system is superior to Dataphone I Plus in both approach and level of service offered. For example, Spectrum is a proactive system; it can sense that a subscriber's installation is experiencing a problem or is about to have one, and it can signal the central monitoring location. Spectrum works with analog and digital circuits, allowing it to be used with services such as AT&T Communications, Inc.'s Accunet Dataphone Digital Service (DDS) and T1.5. Dataphone I Plus is for analog services only.

Spectrum also works with any vendor's modem, not just the Dataphone I and the 100/200 series. Like Dataphone I Plus, it uses a central computer — a Digital Equipment Corp. VAX 8600 — to control the entire operation (see figure below). However, each customer location contains at least one remote test computer (RTC), which monitors the operation of all attached devices.

The RTC is down-line loaded with the operating parameters of the data circuit devices and the transmission lines, and it constantly gathers information concerning overall network operation. This information is transmitted to the central site computer periodically or immediately, should there be a potential catastrophe. The RTC can also be programmed to fix a malfunctioning terminal. Additional RTCs are needed to monitor more than 132 components.

With the exception of the RTC, Spectrum uses an architecture similar to Dataphone I Plus. The VAX 8600 central computer operates with a data base containing an inventory of subscriber equipment and initiates tests to diagnose and correct problems on the network. It also uses a unit called a remote loop-back device that is functionally similar to the RDAU in that it bridges the modem and conducts tests indicated by the RTC or VAX 8600.

Spectrum will also conduct analog and digital loop-back tests and can check the RS-232-C signals on the terminal equipment. Spectrum data services can be used with either the DDS or T-1. When used with the former, it bridges the data channel unit and channel service unit (DSU/CSU) and checks for bit or framing errors. With the T-1, it works with the CSU and looks for bipolar and bit-density violations. In addition, AT&T test services such as the Automatic Bit Access Test System are passed through transparently.

Like AT&T's service, Spectrum isolates the problem areas and informs the vendors and carriers about problem areas. Unlike AT&T, however, Spectrum handles all dealings with the supplier.

Spectrum furnishes reports that are similar to those issued by Dataphone I Plus. As an option, however, Spectrum may be programmed to furnish a response time analysis monitor report showing the use of computer applications such as payroll and inventory control. Although not intended for this purpose, users can analyze this information to determine line loads during certain times of the day.

The slogan "AT&T is the right choice" doesn't apply in this analysis. AT&T's service is too limiting, and it puts too much responsibility on the user. Customers should not have to determine when a problem exists. Getting away from that level of frustration is one reason they subscribe to the service.

The reactive nature of Dataphone I Plus is also out of date. Because system uptime is so critical, users want a monitoring device that can immediately act on a problem by informing the monitoring center at once, or better yet, by taking corrective action.

AT&T Information Systems takes a rather cavalier stance on the Mocc's integrity. When asked what happens to the customer's service if the assigned monitoring center goes down for some reason, AT&T replied, "That has never happened, but we're sure it can be handled." Is AT&T waiting to find out?

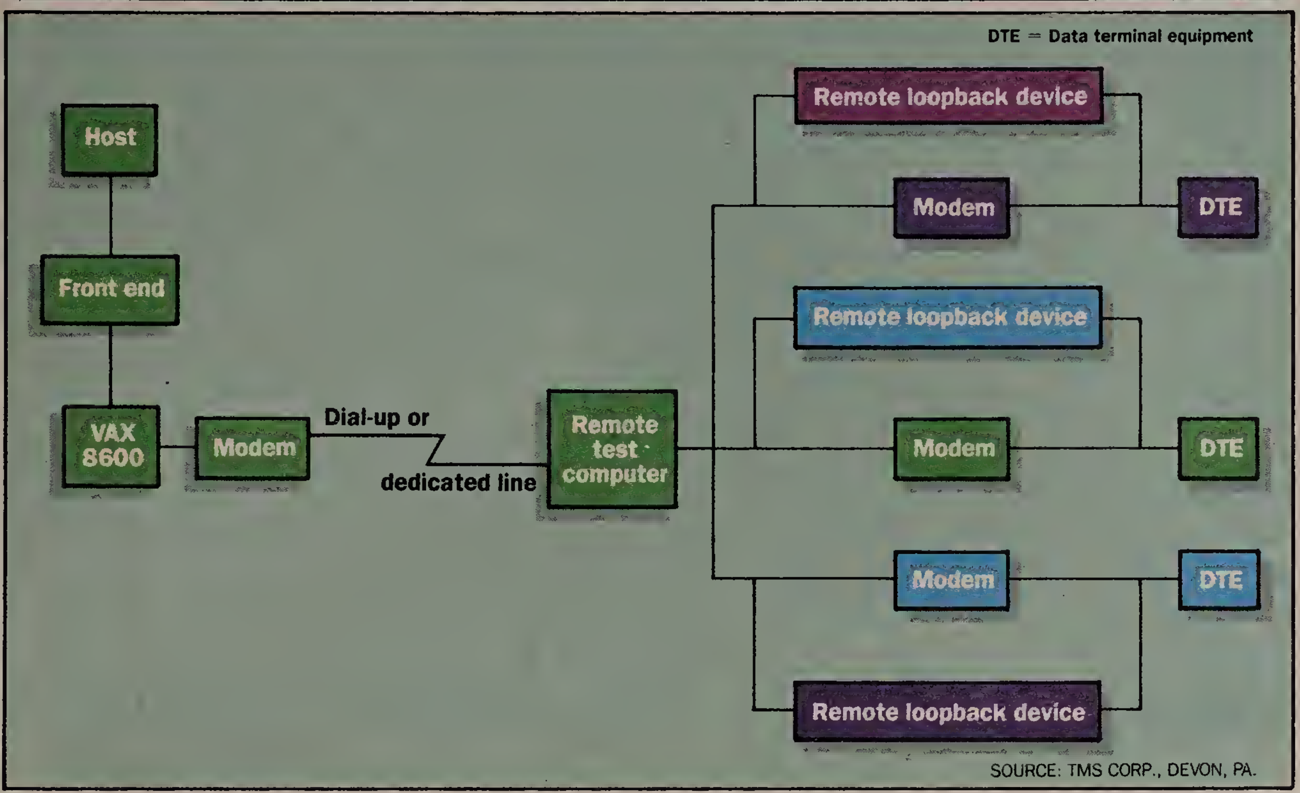
PacTel was asked the same question, and it responded by saying that the monitoring center is backed up by another that contains the customer's data base. The auxiliary center can take over immediately. These PacTel centers also provide redundant control logic and power supplies in the RTC to ensure operation. Spectrum has only two monitoring centers in the U.S., one in Walnut Creek, Calif., and the other in Irvine, Calif.

Although AT&T has Moccs located nationwide, it is more of a psychological safety net than an operational one. PacTel has trained technicians located in principal service offices.

Both AT&T and PacTel offer their services on a subscription basis. For a configuration consisting of 30 point-to-point modems and one multidrop circuit containing three modems, Spectrum service costs $3,150 monthly for a two-year lease and $2,814 monthly for a three-year term. AT&T will not provide prices. ◻

Hunter is president of TMS Corp. in Devon, Pa.

PacTel Spectrum Services



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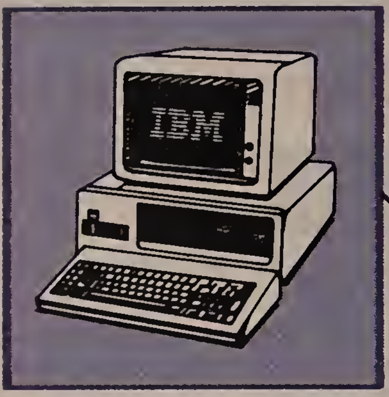

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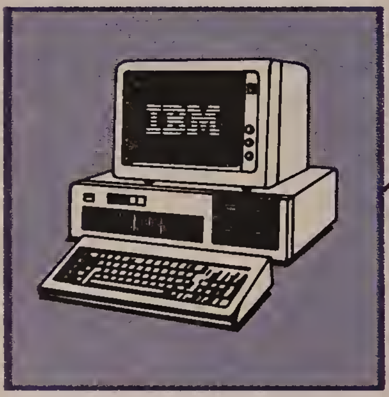

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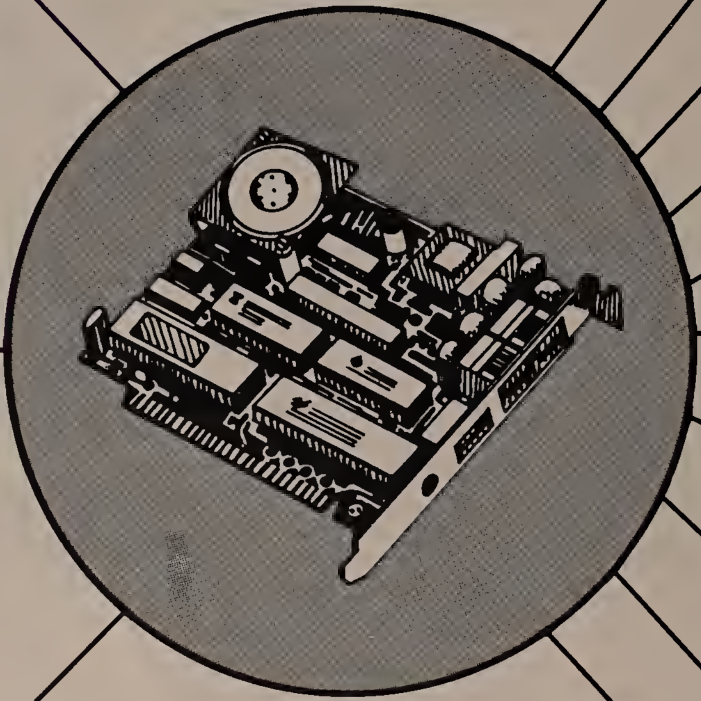

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